

**Clemson University
Clemson, South Carolina**

**Reports Required by *Government Auditing Standards*
and the *Uniform Guidance***

For the year ended June 30, 2018

| | <u>Page</u> |
|---|-------------|
| Schedule of Expenditures of Federal Awards | 1-25 |
| Notes to the Schedule of Expenditures of Federal Awards | 26-27 |
| Independent Auditor's Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with <i>Government</i> <i>Auditing Standards</i> | 28-29 |
| Independent Auditor's Report on Compliance for Each Major Federal Program; Report on Internal Control Over Compliance; and Report on the Schedule of Expenditures of Federal Awards Required by the Uniform Guidance..... | 30-32 |
| Schedule of Findings and Questioned Costs..... | 33-34 |
| Summary Schedule of Prior Audit Findings | 35 |

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER | | | | |
| Department of Agriculture | | | | |
| Acquisition of Goods and Services | 10.RD | 58-6080-7-003 | \$ - | 22,925 |
| Acquisition of Goods and Services | 10.RD | 58-6080-7-004 | - | 17,623 |
| Acquisition of Goods and Services | 10.RD | 58-6080-8-001 | - | 30,696 |
| Acquisition of Goods and Services | 10.RD | 58-6080-8-003 | - | 12,629 |
| Acquisition of Goods and Services | 10.RD | 58-6082-6-013 | - | 19,228 |
| Acquisition of Goods and Services | 10.RD | 58-6082-7-012 | - | 46,907 |
| Acquisition of Goods and Services | 10.RD | 58-6082-7-016 | - | 25,272 |
| Acquisition of Goods and Services | 10.RD | 58-6082-7-017 | - | 20,000 |
| Acquisition of Goods and Services | 10.RD | 58-6082-8-003 | - | 25,800 |
| Acquisition of Goods and Services | 10.RD | 58-6082-8-004 | - | 20,900 |
| Acquisition of Goods and Services | 10.RD | 58-6082-8-009 | - | 9,441 |
| Acquisition of Goods and Services | 10.RD | 58-6082-8-012 | - | 2,095 |
| Adaptation of Intelligent Spray Application Technologies in Peach Orchards | 10.RD | 59-5082-6-002 | - | 44,106 |
| An Administrative Study to Develop Transfer Zones for Native Plant Materials: | | | | |
| Intraspecific Functional Trait Variation - Common Garden Support | 10.RD | 16-CS-11330123-061 | - | 977 |
| Animal Health | 10.RD | Unknown | - | 8,359 |
| Areawide Pest Management of the Invasive Sugarcane Aphid in Grain | | | | |
| Sorghum- Clemson University, South Carolina | 10.RD | 58-6048-6-015 | - | 25,518 |
| Assessment of the Potential for WNS in Bats of Congaree National Park | 10.RD | 15-JV-11330134-108 | - | 5,528 |
| Assisting Farmers in SC to Adopt Modern Soil Moisture Sensing Technologies to Improve | | | | |
| Irrigation Scheduling and to Enhance Environmental Quality and Farm Profits While | | | | |
| Reducing Irrigation Water and Energy Consumption | 10.RD | 69-4639-14-0010 | - | 888 |
| Bat Monitoring on the Andrew Pickens Ranger District | 10.RD | 15-PA-11081209-020 | - | 19,479 |
| Biosensor-Based Assay for the Detection and Quantification of Quorum Sensing | | | | |
| Autoinducers (Acyl Homoserine Lactones and Autoinducer-2) Produced in Package Foods | 10.RD | 2018-67031-27359 | - | 40,708 |
| Building Entrepreneurial Farm Management and Land Stewardship Capacity for | | | | |
| South Carolina New and Beginning Farmers | 10.RD | 2016-70017-25351 | 6,461 | 142,796 |
| Capacity Building for USDA- Rural Development Programs in South Carolina | 10.RD | RD-RB-16-26 | - | 71,060 |
| Clean WaterR3 - Reduce, Remediate, Recycle: Informed Decision Making to Facilitate Use of | | | | |
| Alternative Water Resources | 10.RD | 2014-51181-22372 | 1,288,461 | 1,666,860 |
| Crop Protection and Pest Management Extension Implementation Program for | | | | |
| South Carolina | 10.RD | 2017-70006-27156 | - | 83,880 |
| Crop Protection and Pest Management Extension Implementation Program for | | | | |
| South Carolina to Advance Stakeholder Adoption in Key Commodities | 10.RD | 2014-70006-22568 | - | 26,703 |
| Data Needed for Foreign Regulatory Packages for the PPV Resistant Transgenic Prunus | | | | |
| Domestica CV. 'HoneySweet' | 10.RD | 58-1931-4-012 | - | 8,004 |
| Demonstrating the Influence of Cover Crop Termination Time on Nutrient Provision to | | | | |
| Yield of Cash Crop | 10.RD | NR184639XXXXG006 | - | 1,911 |
| Demonstration of Innovative Nutrient Management Strategies Combined with Soil | | | | |
| Amendments to Enhance Fertilizer Use Efficiency, Farm Profits and | | | | |
| Environmental Quality | 10.RD | 69-3A75-14-268 | - | 88,295 |
| Developing a Life Cycle Assessment Model for Evaluating Policy Implications of Biofuels | 10.RD | 2012-67009-25266 | 1,934 | 8,932 |
| Developing a Sensor-Based, Variable-Rate Nutrient Management Technique for Center | | | | |
| Pivot Irrigation Systems | 10.RD | 2017-67011-26071 | - | 58,771 |
| Developing Host Plant Resistance for Thrips in Cotton to Address Emerging Insecticide | | | | |
| Resistance | 10.RD | 2017-70006-27264 | 29,312 | 67,721 |
| Development and Comparison of Pathogen Viability Tests for Seed Certification and | | | | |
| Improved Management of Bacterial Spot of Tomato | 10.RD | 2017-70006-27206 | 3,391 | 38,618 |
| Edge of Field Water Quality Monitoring | 10.RD | 68-4639-15-527 | - | 13,266 |
| Effects of Prescribed Fire Intensity and Frequency on Bat Foraging Habitat Use and Roosting | | | | |
| Habitat | 10.RD | 17-JV-11330134-108 | - | 16,469 |
| Enhancing FANH Education Through Sensor-Linked Mobile Applications to Improve | | | | |
| Technical Literacy | 10.RD | 2017-70003-26390 | - | 45,226 |
| Enhancing the Nutrient Use Efficiency in Crop Plants by Tailoring the Nitrogen and | | | | |
| Phosphorous Release Rates from Rendered Animal Materials | 10.RD | 2016-67020-25264 | - | 109,541 |
| Evaluating the Net Climate Benefits of Switchgrass Versus Pine Plantations in the Southeast: | | | | |
| A Seed Grant to Support Data Collection and Model Development | 10.RD | 2017-68002-26612 | - | 13,351 |
| Evaluation of Paper Bags for Pest and Disease Management in Organic Peach Production | 10.RD | 2016-51300-25726 | 58,887 | 186,167 |
| Evaluation of Peach NCGR Germplasm for Fruitlet Freeze Tolerance | 10.RD | 58-2032-7-057 | - | 16,399 |
| Expanding the Use of Wood Building Products in SC | 10.RD | 15-CA-11083150-053 | - | 78,928 |
| Forest Health Conditions of St. Thomas and St. Croix, USVI | 10.RD | 15-DG-11120107-021 | - | 2,277 |
| FY2017 NCPN Clemson/Scott Southeastern Budwood Program | 10.RD | AP17PPQS&T00C138 | - | 90,076 |
| Genetic Structure in Native Plants: Foundational Information for Developing Plant | | | | |
| Materials Transfer Zones | 10.RD | 16-CS-11330123-060 | - | 4,695 |
| Genomic Profiling and Development of a Comprehensive Catalogue of Plum | | | | |
| Germplasm Using Genotyping-By-Sequencing (GBS) | 10.RD | 59-8080-6-001 | - | 29,888 |
| Genomics, Transcriptomics and Microbiome Analysis of Dipteran Pests Affecting | | | | |
| Livestock and Humans | 10.RD | 58-3020-6-015 | - | 11,328 |
| Genotypic Specificity in Plant-Herbivore Interactions and its Application to Management | | | | |
| of an Invasive Weed | 10.RD | 2015-67014-22956 | - | 107,851 |
| Hatch | 10.RD | Unknown | - | 3,976,661 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------|--|---------------------------------|----------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Agriculture, continued | | | | |
| Hayman Fire Resample | 10.RD | 14-JV-11221634-108 | - | 7,425 |
| Impact of Fescue Toxicosis on Fetal Development and Postnatal Growth | 10.RD | 2015-67015-23218 | - | 50,534 |
| Impact of Prescribed Fire on Polycyclic Aromatic Hydrocarbon Production and Contaminant Photo-transformation Reductions in Coastal Plain | 10.RD | 2014-67019-21615 | - | 102,981 |
| Improving Soil Health in Peach Orchards: A Demonstration | 10.RD | 68-4639-14-0022 | - | 21,339 |
| In Situ and Ex Situ Rare Plant Conservation | 10.RD | 17-CS-11081209-002 | - | 10,000 |
| Intraspecific Functional Trait Variation Among Populations of Common Species of the Longleaf Pine Ecosystem | 10.RD | 16-JV-11330123-022 | - | 18,786 |
| Investigating the Plant-Soil Feedback That Maintains the Legacy Effect in Invaded Ecosystems to Formulate Knowledge-Based Restoration Practices | 10.RD | 2017-67014-26698 | - | 21,749 |
| Investigation of the Diversity of Phytoseiid Predatory Mites in Watermelons and Tomato and Their Use of Non-Prey Resources | 10.RD | 2018-67012-27994 | - | 23,439 |
| Keeping the Green Heart Healthy: An Ecologically Sound and Economically Viable Conservation Plan for the Cowasee Basin | 10.RD | 2018-67020-27854 | - | 2,208 |
| McIntire Stennis | 10.RD | Unknown | - | 620,167 |
| Modeling Fire-Induced Tree Mortality for Eastern Hardwood Forests | 10.RD | 16-JV-11242311-079 | - | 14,493 |
| Monitoring Success of Farm Bill Programs in Conserving Avian Wildlife | 10.RD | 69-4639-16-261 | - | 30,978 |
| National Needs Training in Computationally Intensive Genomic Analysis and Application | 10.RD | 2016-38420-25299 | - | 102,081 |
| On-Farm Demonstrations to Assist Producers with How Soil Sampling Influences Nutrient Management Decisions | 10.RD | 69-4639-17-140 | - | 18,607 |
| Optimizing No-Till Cover Crop Management for Weed Control in Vegetable Production: Applied Res. & Ext. Training to Facilitate Grower Adoption | 10.RD | 2015-70006-24163 | - | 36,528 |
| Outreach Activities for the Consortium of Appalachian Fire Managers and Scientists | 10.RD | 16-JV-11330136-001 | - | 81,793 |
| Pine Seedling and Thinning Demonstration Site Development in the Piedmont of South Carolina | 10.RD | 69-4639-17-145 | - | 24,168 |
| Potential of Woody Substrate- Based Bioreactors to Remediate Plant Pathogens in Agricultural Runoff for Onsite Water Reuse | 10.RD | 2018-67011-28074 | - | 12,453 |
| Promote the Sustainable Carbon Market to South Carolina Forest Landowners | 10.RD | 69-4639-17-147 | - | 12,451 |
| Repeated Prescribed Fires and Mechanical Fuel Treatments in the Southern Appalachian Mountains: Vegetation and Fuels after a Fourth Burn and a Second Mechanical Treatment | 10.RD | 15-JV-11330136-044 | - | 2,875 |
| Seed Grant on Genomics of Prebiotic Carbohydrates Affecting Lentil Nutritional Quality | 10.RD | 2018-67014-27621 | - | 6,067 |
| Selection, Molecular and Genetic Analysis of HLB Tolerant/Resistant Variant Citrus Plants | 10.RD | 2017-70016-26051 | 154,205 | 339,355 |
| Southeastern Budwood Program | 10.RD | 16-8130-0423-CA | - | 16,834 |
| Stress Induced Modification of the Quantity and Composition of Phytochemicals in Fruits: Optimizing the Nitrogen Supply for Enhancing the Nutritive Quality of Strawberries | 10.RD | 2016-67014-24578 | - | 70,165 |
| The Impact of Leptin Concentrations on the Development of Appetite Regulation in Beef Calves | 10.RD | 2018-67016-27472 | - | 5,757 |
| To Evaluate the Potential of Organic Farming Practices in South Carolina | 10.RD | 69-4639-17-142 | - | 4,173 |
| Toward a Near Real-Time Agricultural Drought Monitoring and Forecasting | 10.RD | 2015-68007-23210 | - | 7,826 |
| Tracking and Managing Diseases of Floriculture Crops Caused by Oomycetes and Fungi | 10.RD | 58-8062-5-037 | - | 51,085 |
| Transforming Nanocellulose Into an Advanced Biorenewable Reinforcement With Hyperbranched Polymers | 10.RD | 2016-67021-25016 | 6,767 | 34,657 |
| Understanding the Vulnerability of Tri-colored Bats to White-nose Syndrome in South Carolina: Torpor Patterns and Hibernacula Conditions | 10.RD | 16-JV-11330134-010 | - | 22,165 |
| Utilization of Cross Laminated Timber | 10.RD | 16-DG-11083150-054 | - | 115,475 |
| Utilizing Deep-Rooted Cover Crops to Enhance Water Quality, Soil Health, and Farm Profits While Reducing Soil Compaction in Coastal Plain Region | 10.RD | 69-3A75-17-274 | - | 57,431 |
| Water Use in the Propagation of Vegetative Animals | 10.RD | 58-3607-3-991 | - | 26,560 |
| Will Use of Alternate Winter Roosts by Tri-Colored Bats Protect Them From White-Nose Syndrome? | 10.RD | 18-JV-11330134-001 | - | 33,009 |
| Pass-through programs from: | | | | |
| Cal Poly Corporation | | | | |
| Improving Strawberry Gray Mold management through Identification of Ineffective Sprays | 10.RD | 2016-18-46134 | - | 8,648 |
| California Strawberry Plant Growers Association | | | | |
| Identification of Inoculum Sources and the Development of Methods to Reduce Dispersal of Xanthomas fragariae to minimize its impact on international trade of strawberry nursery stock | 10.RD | TASC-2015-31-Clem | - | 66,849 |
| CHK Group, Incorporated | | | | |
| Development and Use of Biosilica as a High Reactivity Pozzolan in Ultra-High Performance Concrete (UHPC) Mixtures | 10.RD | CU-01 | - | 12,342 |
| Cooper Tire & Rubber Company | | | | |
| Securing the Future of Natural Rubber-An American tire and bioenergy platform from Guayle | 10.RD | 2016000344 | - | 900 |
| Cornell University | | | | |
| Developing an Eastern Broccoli Industry Through Cultivar Development Economically and Environmentally Sustainable Production and Delivery | 10.RD | 79598-10781 | - | 61,000 |
| Dillon County | | | | |
| Demonstrating tillage and cover crop management strategies on a corn-wheat-soybean rotation | 10.RD | USDA prime #69-4639-15-504 | - | 2,872 |
| Kansas State University | | | | |
| 2017 Air Force/4-H Partnership Youth Camps | 10.RD | S17158 | - | 12,182 |
| Navy/4-H Military Partnership and Outreach and Support | 10.RD | S17178 | - | 10,364 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina**Schedule of Expenditures of Federal Awards****For the year ended June 30, 2018**

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|----------------------------|---|--|-----------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Agriculture, continued | | | | |
| Pass-through programs from, continued: | | | | |
| Louisiana State University | | | | |
| Biology, Ecology and Impact of Melanaphis Sacchari In Sugarcane and Sorghum Production Systems | 10.RD | 105611 | - | 4,030 |
| Michigan State University | | | | |
| RosBREED: Combining Disease Resistance with Horticultural Quality in New Rosaceous Cultivars | 10.RD | RC1042858 | - | 172,326 |
| North Carolina Central University | | | | |
| New Strategy and Method for Isolating and Concentrating Foodborne Pathogens | 10.RD | PO# USDA-NIFA-AFRI-003958 | - | 59,713 |
| North Carolina State University | | | | |
| An Investigation into Antixenosis, Antibiosis and Tolerance Mechanisms to Kudzu Bug in Soybean | 10.RD | 2015-2467-01 | - | 11,352 |
| Building Capacity to Control Viral Foodborne Disease: A Translational, Multidisciplinary Approach | 10.RD | 2011-0494-01 | - | 32,326 |
| Cross-Commodity Bt Resistance in Dynamic Row Crop Agroecosystems: Linking the Development of GE Technology at the Landscape-Scale to Resistance in Cotton Bollworm | 10.RD | 2017-2861.01 | - | 3,248 |
| Determining Effects of Cover Crop Use on Pest Attraction to Tomato | 10.RD | 2015-0085-31 | - | 4,883 |
| Growing New Roots: Grafting to Enhance Resiliency in U.S. Vegetable Industries | 10.RD | 2016-1498-01 | - | 176,930 |
| Impact of Transgenic Bt Crops on Helicoverpa Zea Ecology and Subsequent Resistance Risk | 10.RD | 2014-2219-01 | - | 1,130 |
| Moving Regional Food Systems Toward Sustainability: An Adaptive and Interactive Online Course in Local Food System Development for NC, SC, and VA Extension Agents and Other Service Providers | 10.RD | 2017-1456-03 | - | 14,664 |
| Southeast Cattle Handling for Women Producers: Advanced BQA Training and Farm Safety | 10.RD | 2017-1419-02 | - | 2,242 |
| Strawberry Disease Cycle Illustrations, Animations, and Time-Lapse Videos for IPM Education | 10.RD | 2015-0085-30 | - | 5,922 |
| Pennsylvania Department of Agriculture | | | | |
| Short and long-term solution for Armillaria Root Rot in Prunus; FY2016 Specialty Crop Block Grant Program and 2015 Specialty Crop Multi-State Program | 10.RD | ME#44165761 // 16SCCMPA004 | 55,123 | 171,733 |
| Pheasants Forever | | | | |
| A multi-species approach to managing the effects of weather and land cover on upland game birds | 10.RD | LPCI-16-08 | - | 28,478 |
| Rutgers, The State University of New Jersey | | | | |
| Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture | 10.RD | 6065-PP2016-PO#479850 | - | 77,516 |
| Protecting Pollinators with Economically Feasible and Environmentally Sound Ornamental Horticulture | 10.RD | 6142-PP2016- PO#607871 | - | 99,262 |
| South Carolina Department of Agriculture | | | | |
| Enabling Breeding of Peach Cultivars for Spring Climate Resilience Traits | 10.RD | D039/AM170100XXXXG034 | - | 4,635 |
| Evaluation of Novel POST-Emergent Herbicide Concepts in Sweet Potato | 10.RD | D040/AM170100XXXXG034 | - | 6,335 |
| Nutritional and Biological Yield Improvement of SC Grown Kale (Brassica oleracea var. acephala L.) for Improved Human Health | 10.RD | NONE | - | 6,582 |
| Promoting Spinach Consumption and Sustainable Agricultural Practices in Schools Using Aquaponics | 10.RD | NONE | - | 3,690 |
| Restoring the Sweet Potato Industry in South Carolina through Research and Extension | 10.RD | NONE | - | 12,531 |
| Selecting Organic Kale Varieties with Increased Production and Nutritional Quality | 10.RD | NONE | - | 19,258 |
| South Carolina Watermelon Disease Survey | 10.RD | NONE | - | 1,415 |
| Training Growers in Use of Cover Crops and Reduced Tillage for Organic Vegetable Production | 10.RD | NONE | - | 4,500 |
| South Carolina Forestry Commission | | | | |
| Ice Storm Impact on Forest Health: Monitoring & Predicting the Growth & Mortality of Ice-damaged Trees in Southern Forests | 10.RD | NONE | - | 29,615 |
| Post-hurricane Fuel Dynamics and Its Implications to Fire Behavior | 10.RD | NONE | - | 1,134 |
| The Center for Produce Safety | | | | |
| Preservation of Stone Fruits by Spray Application of Edible Coatings with Antimicrobial Properties | 10.RD | 2018CPS01; Grant # SCB17053 | - | 40,227 |
| Validating a Physically Heat-treated Process for Poultry Litter in Industry Settings Using the Avirulent Salmonella Surrogates or Indicator Microorganisms | 10.RD | 2016CPS05 | - | 83,949 |
| University of Arkansas | | | | |
| Risk Management for Current and Potential Users of Unmanned Aircraft Systems (UAS) an Emerging Technology | 10.RD | 21752-01 | - | 3,660 |
| University of Florida | | | | |
| Evaluate the Efficacy of Selected Insecticides Against Redheaded Flea Beetle in Field Containerized Production | 10.RD | PO 1800574483 | - | 3,620 |
| Strategic Management of Multiple Diseases in Strawberry Nurseries and Production Fields in the Eastern United States | 10.RD | UFDSP00010493 | - | 138,842 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Agriculture, continued | | | | |
| Pass-through programs from, continued: | | | | |
| University of Georgia | | | | |
| A System Approach to Improve Disease Management and Production of Watermelon in the Southeastern United States | 10.RD | RF332-692/5054176 | - | 105,700 |
| Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops | 10.RD | RD309-129/S001062 | - | 2,928 |
| Getting to the Bottom of Bronzing, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers | 10.RD | RD309-129/S001067 | - | 1,206 |
| Identification Factors Involved in Peach Skin Streaking | 10.RD | RD309-137/S001373 | - | 15,000 |
| Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence | 10.RD | RD309-129/S001061 | - | 3,229 |
| Optimizing Nutritional Management in Fruit Tree Production in Southern U.S. | 10.RD | RD309-137/S001520 | - | 14,836 |
| Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce | 10.RD | RD309-137/S001411 | - | 59,265 |
| University of Hawaii | | | | |
| New Engineered Approaches for Recovering Disperse Populations of Low-Tolerance Pathogens from Food | 10.RD | 2014-67005-21702 | - | 17,162 |
| University of Minnesota | | | | |
| Innovating to Expand Farm Financial Management and Benchmarking | 10.RD | H005728802 | - | 15,099 |
| University of South Carolina | | | | |
| Evaluation of Farm to Institution Programs (Farm to School) | 10.RD | 16-3062/PO#20000020344 | - | 550 |
| University of Tennessee | | | | |
| Bioleaching of Biomass to Improve Thermochemical Conversion Efficiency with Reduced Emission | 10.RD | 8500047637 | 1,518 | 15,084 |
| Omega-3 and Fatty Acid Production from Sweet Sorghum | 10.RD | 8500054640 | - | 102,053 |
| University of Texas at San Antonio | | | | |
| Cloud-based Decision Support System Integrating Biomass Quality, Uncertainty and Risk to Optimize the Production of Second-generation Biofuels | 10.RD | 1000001538 | - | (1,109) |
| US Endowment for Forestry & Communities | | | | |
| A Systems Approach to Design and Manufacture CNC-Enabled Lightweight Automotive Components | 10.RD | E17-18 | - | 10,206 |
| VRM Labs, Incorporated | | | | |
| Novel Natural Antioxidants Extracted from Animal Red Blood Cells | 10.RD | VRM-001 | - | 3,399 |
| Washington State University | | | | |
| Genome Database for Rosaceae: Empowering Specialty Crop Research Through Big-Data Driven Discovery and Application In Breeding | 10.RD | 123519-G003399 | - | 95,274 |
| Total Department of Agriculture | | | 1,606,059 | 11,231,154 |
| Department of Commerce | | | | |
| FY 2017 Summer Undergraduate Research Fellowship PML-PL | 11.RD | 70NANB17H133 | - | 250 |
| Improving Disaster Resilience by Quantifying WUI community ember exposure | 11.RD | 70NANB17H213 | - | 58,723 |
| Relativistic and QED Effects in Highly Charged Ions | 11.RD | 70NANB16H204 | - | 191,595 |
| Summer Undergraduate Research Fellowship MML SURF | 11.RD | 70NANB18H141 | - | 14,788 |
| Summer Undergraduate Research Fellowship SURF | 11.RD | 70NANB18H141 | - | 5,869 |
| SURF - Boulder | 11.RD | 70NANB18H047 | - | 8,718 |
| Pass-through programs from: | | | | |
| GenWest | | | | |
| Microplastic Marine Debris Research Support | 11.RD | GSI-CU-1505 | - | 3,737 |
| South Carolina Sea Grant Consortium | | | | |
| Adaptability Toolkit for South Carolina's Coastal Water Infrastructure - Year 1 | 11.RD | N366 (R/CH-5) | - | (632) |
| Adaptability Toolkit for South Carolina's Coastal Water Infrastructure - Year 2 | 11.RD | N466 (R/CH-5) | 7,250 | 35,625 |
| Examining the Social Carrying Capacity for Mariculture Development on the South Carolina Coast | 11.RD | R/A-36 | - | 17,129 |
| Microplastic Contamination in Coastal South Carolina: Sources, Trophic Transfer, and Abundance in Biota - Year 2 | 11.RD | N468 (R/ER-46) | 29,552 | 65,893 |
| Performance Based Design of Low Impact Development Technologies in Response to Climate Change Induced Changes in Rainfall Patterns - Year 1 | 11.RD | N367 (R/CH-6) | - | 3,037 |
| Performance Based Design of Low Impact Development Technologies in Response to Climate Induced Changes in Rainfall Patterns - Year 2 | 11.RD | N467 (R/CH-6) | - | 35,601 |
| Total Department of Commerce | | | 36,802 | 440,333 |
| Department of Defense | | | | |
| (DURIP-16) Grid Computing Laboratory for Integrative Behavioral and Optimization Research | 12.RD | FA9550-16-1-0326 | - | 37,791 |
| (YIP) Engineering Robust Enzyme Activity Through Fundamental Studies of Extremophile Enzymes | 12.RD | FA9550-15-1-0163 | - | 135,291 |
| 2018 Mixed Integer Programming Workshop | 12.RD | N00014-18-1-2161 | - | 1,000 |
| A Multi-Function/Multi-Fuel ThermoAcoustic Generator/Heat Pump (TAG/HP) for Marine Expeditionary Forces | 12.RD | N00014-14-1-0227 | - | 74,377 |
| A Practical Approach for Modeling Matrix Diffusion Effects in REMChlor | 12.RD | W912HQ-14-C-0009 | 108,529 | 238,730 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------|--|---------------------------------|----------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Defense, continued | | | | |
| A Unified Materials Approach to Mitigating Nonlinearities in HEL Optical Fibers | 12.RD | N00014-17-1-2546 | 42,030 | 239,746 |
| Abiotic Transformation of Chloroethenes in Low-Permeability Formations | 12.RD | W912HQ-16-C-0022 | 139,622 | 359,999 |
| Addressing Circuitous Currents MVDC Power Systems Protection | 12.RD | N00014-16-1-3113 | - | 42,711 |
| Assessing the Impact of Asymmetric Information in Interdiction and Bilevel Games | 12.RD | N00014-17-1-2421 | - | 83,757 |
| Complete and Resilient Documentation (CARD) for Operational Medical Environments | 12.RD | W81XWH-17-C-0238 | 62,914 | 362,382 |
| Complex Models on Graph Based Topological Spaces | 12.RD | W911NF-17-1-0455 | - | 90,440 |
| Computational Instrumentation for Research in Mobile Wireless Communication Networks | 12.RD | W911NF-17-1-0244 | - | 250,895 |
| Develop Integrated Management Practices for the Control of Chinese Tallow (Triadica sebifera) in Coastal Forests | 12.RD | TO#M0026317F0023/ DO#M0026317D0006 | - | 59,845 |
| Develop Integrated Management Practices for the Control of Chinese Tallow (Triadica sebifera) in Coastal Forests | 12.RD | TO#M0026318F0018/ DO#M0026317D0006 | - | 1,055 |
| Develop Integrated Management Practices for the Control of Chinese Tallow (Triadica sebifera) in Coastal Forests for Natural Resources Program, MCRD Parris Island, South Carolina | 12.RD | W9126G-14-2-0042 | - | 10,169 |
| Discriminatory Transcriptional Response of Environmental Microorganisms and Microbial Communities to Low-Dose Ionizing Radiation | 12.RD | HDTRA1-17-1-0002 | - | 257,176 |
| Economic Impact Analysis of the Economy Below Thurmond Dam in Response to Water Quality and Water Quantity Constraints | 12.RD | W912HZ-16-2-0035 | - | 7,480 |
| Efficient Delivery of Information in Tactical Packet Radio Networks | 12.RD | W911NF-15-1-0545 | - | 112,365 |
| Enhancing mHealth Technology in the PCMH to Activate Chronic Patients | 12.RD | W81XWH-15-C-0070 | - | 368,214 |
| Exploration of Carbon-Based Hybrid Nanoarchitectures as a Unique Platform for Managing Excited State Energies and Processes | 12.RD | FA9550-16-1-0166 | - | 59,567 |
| GPU Applications for TrueView Scene Simulation | 12.RD | N66001-16-P-6865 | - | 24,614 |
| High Order Bessel Beams Integrated with Time (HOBBITS) | 12.RD | N00014-18-1-2377 | - | 8,646 |
| High Power, Single Frequency Broad-area Diode Laser Emitters/Arrays and Their Applications in Microresonator Based Frequency Combs Optoelectronics Program | 12.RD | W911NF-14-1-0640 | - | 91,781 |
| HOBBIT Control System Development for Higher Order Bessel Beams Integrated in Time (HOBBIT) | 12.RD | N00014-17-1-2779 | - | 174,202 |
| Identifying and Evaluating Impacts to Wetlands from the Savannah River Estuary | 12.RD | W912HZ-14-2-0002 | - | 254,768 |
| Integrated Modal Control and Beam Combining of High Power Diode Arrays for the Next Generation HEL System | 12.RD | N00014-17-1-2556 | 3,964 | 161,175 |
| Liquid Sampling-Atmospheric Pressure Glow Discharge (LS-APGD) Microplasmas for Elemental, Isotopic, and Molecular Determinations | 12.RD | HDTRA1-14-1-0010 | - | 173,666 |
| Mini-Conference on Discrete Mathematics and Algorithms | 12.RD | H98230-16-1-0052 | - | 1,425 |
| New Fouling Deterrent Strategies to Defeat Barnacle Biofouling | 12.RD | N00014-14-1-0488 | - | (69) |
| New RLT Theory for Solving Continuous Nonlinear and Mixed-Discrete Optimization Problems | 12.RD | N00014-16-1-2168 | - | 95,139 |
| New Techniques for Network-Coded Multicast Distribution in Wireless Communications Networks | 12.RD | N00014-17-1-2418 | - | 131,287 |
| Non-Destructive Evaluation Precursor Mechanics of Embedded Magnetostrictive Composite Sensor | 12.RD | W911NF-17-2-0184 | - | 41,693 |
| Optical Fibers with Elevated Threshold for Higher-Order Mode Instability | 12.RD | FA9451-15-D-0009/0002 | 29,684 | 53,607 |
| Optimization Under Uncertainty and Conflict: Algorithms for Heterogeneous Quadratic Programs | 12.RD | N00014-16-1-2725 | - | 151,817 |
| Performance as a Partner in the Military Uniform System Technology (MUST) Program - Option 2 | 12.RD | SP4701-14-D-7004/0004 | - | 265 |
| Predictive Structure-Function Relationships for Enzymes Immobilized on Complex Surfaces | 12.RD | HDTRA1-16-1-0023 | - | 147,543 |
| Preventing Infection by Surface Modification of Orthopaedic Fracture Fixation Implants for Improved Limb Salvage Outcomes | 12.RD | W81XWH-14-1-0438 | 26,849 | 162,619 |
| Privacy Support for TLA | 12.RD | W911QY-16-C-0105 | - | 194,154 |
| Rapid and Accurate Uncertainty Propagation for Nonlinear Dynamic Systems by Exploiting Model Redundancy | 12.RD | FA9550-16-1-0158 | - | 106,852 |
| Reactive Membranes for Rapid Isotopic Analyses of Waterborne Special Nuclear Material | 12.RD | HDTRA1-16-1-0016 | - | 341,171 |
| Reactive-Moiety Functionalization of Polyurea for Increased Shock-Mitigation Performance | 12.RD | N00014-14-1-0286 | - | 62,103 |
| Spatially and Temporally Agile Optical Communication Links for Maritime Applications | 12.RD | N00014-16-1-3090 | - | 284,834 |
| Stomach Content Analysis of Feral Hogs | 12.RD | W912HZ-17-C-0026 | - | 36,588 |
| Trust-based Human-Robot Collaboration (HRC) for High-Level Distributed Multi-Robot Motion Planning with Temporal Logic Constraints | 12.RD | FA9550-17-1-0050 | - | 140,620 |
| Ultra-Trace Level Quantification of Alpha- and Beta- Emitting Radionuclides with Extractive Scintillating Resin | 12.RD | HDTRA1-12-1-0012 | - | 199,181 |
| Wafer Bonding for Hybrid Photonic Integration Research | 12.RD | W911NF-17-1-0283 | - | 7,634 |
| Pass-through programs from: | | | | |
| Advanced Functional Fabrics of America | | | | |
| Yarn Covering of Advanced Monofilament | 12.RD | PO# 381 | - | 11,203 |
| Advanced Robotics for Manufacturing Institute | | | | |
| Robotics Workforce Development | 12.RD | NONE | - | 192,152 |
| Smart Companion Robots for Automotive Assembly (C/I ARMI) | 12.RD | ARM-17-QS-F-02 | 15,750 | 86,471 |
| Arizona State University | | | | |
| Development of substrate-loaded microbial fuel cells for powering remote sensors | 12.RD | 17-169 | - | 15,921 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------|---|---------------------------------|----------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Defense, continued | | | | |
| Pass-through programs from, continued: | | | | |
| Clemson University Research Foundation | | | | |
| Advanced Optical Fibers for High Power Fiber Lasers | 12.RD | W911NF-10-1-0423 | - | 171,600 |
| Novel Fiber Concepts for High Power Single Mode Fiber Lasers | 12.RD | W911NF-12-1-0332 | - | 211,223 |
| Cornerstone Research Group, Incorporated | | | | |
| Health Monitoring Garment Development Consulting | 12.RD | PO # 2017-00926 | - | 9,984 |
| Creare LLC | | | | |
| LWIR Fiber Bundle for Thermal Imaging in Gas Turbine Systems | 12.RD | 89981 | - | 35,647 |
| GSI Environmental Incorporated | | | | |
| Development of a Quantitative Framework for Evaluating Natural Attenuation of 1,1,1-TCA,1,1-DCA,1,1-DCE, and 1,4-Dioxane in Groundwater | 12.RD | 2017-111-CLEMS-01 | - | 27,684 |
| Leidos, Incorporated | | | | |
| Organizational Justice Training for Supervisors | 12.RD | P010188654 // CASES TO31 | - | 95,228 |
| Massachusetts Institute of Technology | | | | |
| Evaluation of Radiation-induced Photonic Defects in Si, Ge, Chalcogenides and Polymers | 12.RD | 5710003309 | - | 24,437 |
| Microhortone, LLC | | | | |
| Microwave Flow Cytometer: Count Microorganisms in Water | 12.RD | CU-0001 | - | 75,206 |
| Radiance Technologies Incorporated | | | | |
| High Energy Lase Advanced Concepts (HELAC) | 12.RD | 175-3093; T/O No.: 0008 | - | 75,837 |
| Rutgers, The State University of New Jersey | | | | |
| Single Crystal Fiber Lasers | 12.RD | 4816 PO # 445244 | - | 51,450 |
| Scientific Research Corporation | | | | |
| Joint Mission Environment Test Capability (JMETC) Support | 12.RD | SR20181162 // SRC-BOA-0011-16-001 | - | 22,250 |
| Joint Mission Environment Test Capability (JMETC) Support | 12.RD | TO SR20172509 (T218) // BOA SRC-BOA-0011-16-001 | - | 161,239 |
| Joint Mission Environment Test Capability (JMETC) Support | 12.RD | TO# SR20170068//BOA# SRC-BOA-0011-16-001 | - | 179,848 |
| Solutions IES | | | | |
| Estimating Mobile-Immobile Mass Transfer Parameters Using Direct Push Tools | 12.RD | 2015.0031.ARMY | - | 50,969 |
| Sotera Defense Solutions Incorporated | | | | |
| Hydrothermal Cladding of Single Crystal Fibers of Doped YAG. Phase2 | 12.RD | SC170104 SC160015//Prime | - | 49,947 |
| Hydrothermal Cladding of Single Crystal Fibers of Yb Doped YAG | 12.RD | # N00173-14-D-2023 | - | 9,919 |
| Southwest Research Institute | | | | |
| CWA THERMAL DEFEAT IN REACTIVE ATMOSPHERES | 12.RD | J99059CP | 32,883 | 56,604 |
| Structured Materials Industries, Incorporated | | | | |
| Transparent Electromagnetic Shield Coatings | 12RD | 42011-081215-02 // CU Ref# 20150002800 | - | 16,500 |
| TH Wiedemeier & Associates Incorporated | | | | |
| Providing Additional Support for MNA by Including Quantitative Lines of Evidence for Abiotic Degradation and Co-Metabolic Oxidation of Chlorinated Ethylenes | 12.RD | 201502 | - | (181) |
| University of Missouri - Columbia | | | | |
| Site Preparation for Longleaf Pine Restoration on Hydric Sites: Stand Development and Ground Layer Response 15 Years Following Planting | 12.RD | C00053591-1 | - | 12,538 |
| University of Dayton Research Institute | | | | |
| Carbon Dots for Energy Conversion and Storage Applications | 12.RD | RSC16113 | - | 11,296 |
| University of Delaware | | | | |
| Tailored University Feedback for Forming (TuFF) | 12.RD | 42525 | - | 481,709 |
| University of Illinois | | | | |
| Internal Cooling of Fiber and Disc Lasers by Radiation Balancing and Other Optical or Phonon Processes | 12.RD | 084272-16069 | - | 254,665 |
| University of Michigan | | | | |
| Heat Rejection Using Advanced Materials - Passive and Active Cooling Strategies | 12.RD | 3003058759 | - | 87,549 |
| Improving Energy Efficiency and Mobility of Connected Fleets via Route Preview and Cooperative Control | 12.RD | 3003058759 | - | 25,733 |
| Improving Energy Efficiency and Mobility of Off-Road Connected Fleets via Route Preview and Cooperative Control | 12.RD | 3003058759 | - | 48,893 |
| Metam-Materials Design for Tank Tread Backers Pads | 12.RD | 3003058759 | - | 992 |
| Optical Control Pairing and Scheduling for Manned-Unmanned Vehicles Teaming Based on RoboTrust Algorithms | 12.RD | 3003058759 | - | 48,985 |
| Systems Approach to Wheel and Pad Metamaterial Design Including Robustness Issues | 12.RD | 3003058759 | - | 39,478 |
| Tools for Optimal Selection of Energy Storage Technology in Electrified Military Vehicles | 12.RD | 3003058759 | - | 125,622 |
| Virginia Polytechnic Institute | | | | |
| Chiral Spin Liquids and Other Topological Phases of Cold Atoms and Molecules in Optical Lattices | 12.RD | 450408-19244 | - | 66,164 |
| Total Department of Defense | | | 462,225 | 8,675,067 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of the Interior | | | | |
| Administrative Histories of Fort Sumter National Monument and Charles Pinckney National Historic Site | 15.RD | P14AC01689 | - | 37,620 |
| Analysis of Bird Population Count Data | 15.RD | G16AC00400 RWO #101 | - | 8,498 |
| Community and Ecosystem-Level Effects of Growing v. Dormant Season Burning in the Southern Appalachians | 15.RD | L16AC00192 | - | 48,209 |
| Conservation of Parrott Rifle Tubes, Carriages, and Chassis' at Fort Sumter | 15.RD | P16AC00782 | - | 5,178 |
| Eastern Brown Pelicans: Dispersal, Seasonal Movements and Monitoring of PAH's and Other Contaminants in the Northern Gulf of Mexico | 15.RD | G12AC20367 RWO #91 | - | 187,031 |
| Evaluating Bat Community Structure Post-WNS in Chickamauga and Chattanooga National Military Park | 15.RD | P16AC01114 | - | 17,296 |
| Evaluating the Effect of White-Nose Syndrome on Long-Term Bat Community Structure and Remnant Bat Population Ecology | 15.RD | G16AC00056 RWO #99 | - | 29,299 |
| Foresight for Disaster Management: Infrastructure Risk Index Analysis | 15.RD | P16AP00189 | - | 12,765 |
| Fuels Management and Cultural Landscape Restoration, Kings Mountain National Military Park and Other Southeast Region Parks | 15.RD | P15AC01798 | - | 20,761 |
| Human and Ecological Health Impacts Associated with Water Reuse: Engineered Systems for Removing Priority Emerging Contaminants | 15.RD | G15AP00171 P08AC00215 | 73,990 | 73,990 |
| Internship Program for Fire and Fuels Management | 15.RD | (formerly J5500080012) | - | 16,552 |
| JFSP Project 14-1-06-19-- Forest Fire Alters Disinfection Byproduct Precursors from Forested Watersheds | 15.RD | L14AC00163 | - | 92,831 |
| Liquefaction Probability Analysis of Pleistocene Deposits in the Greater Charleston, South Carolina Area | 15.RD | G16AP00118 | - | 19,627 |
| Multiscale Random Field-Based Probabilistic Regional Liquefaction Mapping | 15.RD | G17AP00044 | - | 23,331 |
| Needs Assessment for Facilities Maintenance Specialty Career Field | 15.RD | P12AC11224 | - | 14,747 |
| Needs Assessment for Visitor and Resource Protection and Three Specialty Career Fields in Collaboration of the CESU Network | 15.RD | P12AC11224 (H5000085050) | - | 7,185 |
| NPS Southeast Region Marine Science Support Center | 15.RD | P15AC01833 | - | 22,380 |
| Refinement of Training Needs Assessment for National Park Service within the Office of Communications | 15.RD | P12AC11224 | - | 228 |
| Research to Evaluate Visitor Use Distributions, Impacts, Crowding, and Conflicting Use at Multi-Use Sites in Katmai National Park and Preserve | 15.RD | P17AC01038 | - | 5,158 |
| Retreat of Tidally Influenced Freshwater Forested Wetlands in the Southeast: Biogeochemical Investigations and Field Support | 15.RD | G14AC00132 | - | 35,257 |
| Social Science Research to Support the Implementation of a Visitor Use Management (VUM) Strategy for Commercially-guided, Boat-based Polar Bear Viewing at the Arctic National Wildlife Refuge | 15.RD | F17AC00101 | 14,997 | 73,170 |
| South Carolina Alligator Adaptive Management Strategies: Population Dynamics, Habitat Utilization and Conservation Threats | 15.RD | G12AC20329 RWO #92 | - | 26,202 |
| Spatial Ecology, Movement Patterns, and At-Sea Habitat use of Brown Pelicans in the South Atlantic Bight | 15.RD | G16AC00395 RWO #100 | - | 149,148 |
| State Water Resources Research Institute Program | 15.RD | G16AP00082 | 8,113 | 86,641 |
| The Effectiveness of Community Conservation Enterprises as a Tool for Sustainable Community Livelihoods and Conservation of Mountain Gorillas Across the Virunga Trans-boundary Landscape | 15.RD | F16AP00402 | - | 6,359 |
| The Effects of Management on Carbon Sequestration in Pocosin Wetlands of the Great Dismal Swamp, Virginia | 15.RD | G14AC00131 | - | 25,226 |
| Vessel-based Surveys for Pelagic Seabirds in the Gulf of Mexico | 15.RD | G17AC00371 RWO #102 | 58,753 | 83,199 |
| Visitor Use Management Research of Delaware Water Gap National Recreation Area | 15.RD | P14AC01707 | - | 17,637 |
| Pass-through programs from: | | | | |
| Auburn University | | | | |
| Improving Southern Flounder Management in Alabama Coastal Waters by Quantifying Habitat Specific Rates of Growth, Sex Determination, and Recruitment to the Commercial and Recreational Fisheries | 15.RD | 18-FAA-223047-CU | - | 21,785 |
| Florida Fish & Wildlife Conservation Commission | | | | |
| Conserving Florida Grasshopper Sparrows by Understanding Predation Impacts and Habitat Use by a Common Nest Predator, the Eastern Spotted Skunk, in Relation to On-going Prescribed Fire Management | 15.RD | 16105 A-1 | - | 62,738 |
| Kansas State University | | | | |
| Evaluation of the Relationship Between Current Conditions, Travel Patterns, Visitor Thresholds, and Ferry Services at Cumberland Island National Seashore | 15.RD | S18038 | - | 10,258 |
| Montana Fish Wildlife & Parks | | | | |
| Swift Fox Habitat and Dispersal on the Northern Great Plains of Montana | 15.RD | FWP# 17-575 | - | 14,625 |
| National Fish & Wildlife Foundation | | | | |
| Northern Great Plains Swift Fox Connectivity (MT) | 15.RD | 0103.16.051313 | - | 53,598 |
| North Carolina Wildlife Resources Commission | | | | |
| Eastern Hellbender Reproductive and Larval Ecology | 15.RD | WM-0326 | - | 22,097 |
| Ecological Studies and Monitoring Strategies for Eastern Spotted Skunks in North Carolina | 15.RD | WM-0322 | - | 42,221 |
| Factors Influencing Bog Turtle Abundance and Nest Success in North Carolina | 15.RD | WM-0306 | - | 16,475 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of the Interior, continued | | | | |
| Pass-through programs from, continued: | | | | |
| Population Analysis of Self-Sustaining Trout in North Carolina Streams: Current Dynamics and Future Monitoring Strategies South Carolina Department of Natural Resources | 15.RD | DIF-0026 // PO No. NC10362680 // NC-F-17AF00221 | - | 21,561 |
| A Resurvey of Historical Green Salamander Locations in South Carolina | 15.RD | SCDNR FY2017-016 F16AP00113 (P24014306116P240_P967) | - | 11,623 |
| Distribution, Population Ecology, Genetic Relatedness and Habitat Associations of Eastern Spotted Skunks in South Carolina | 15.RD | SCDNR FY2016-007/ P24014403016 | - | 15,880 |
| Impacts of Special Hunting Clinics on the Recruitment and Retention of Young Adult College Student Hunters in South Carolina | 15.RD | SCDNR FY2018-001/ P24016440118 | - | 12,375 |
| Loggerhead Shrike Distribution and Population Ecology in South Carolina | 15.RD | SCDNR FY2016-010/ P24019084009 | - | 14,216 |
| Roosting and Foraging Ecology of Rare and Sensitive Coastal Bats | 15.RD | SCDNR FY2017-019/ P24014304618 | - | 17,153 |
| South Carolina Small River Conservation Planning Project | 15.RD | SCDNR FY2018-008/ P24019497415 | - | 2,541 |
| South Carolina Small River Conservation Planning Project (2016-2018) | 15.RD | SCDNR FY2017-011 | - | 13,916 |
| University of Utah Research to Inform Visitor Use Planning at Theodore Roosevelt National Park | 15.RD | 10044755-CLEMSON | - | 31,902 |
| University of Wyoming The Persistence of American Pika (Ochotona Princeps) in the Greater Yellowstone Ecosystem in a Future, Warmer World | 15.RD | 1002954E-CU | - | 293 |
| Wildlife Management Institute Interactive Conservation Planning for the Appalachian LCC (ALCC) | 15.RD | ALCC 2014-02 | - | 50,307 |
| Total Department of the Interior | | | 155,853 | 1,581,089 |
| Department of Justice | | | | |
| Pass-through programs from: | | | | |
| Chesterfield County School District Testing Integrative Models to Improve School Safety; Positive Behavior Interventions Support and the Olweus Bullying Prevention Program | 16.RD | 2014CK-BX-0012-CU | - | 256,198 |
| Total Department of Justice | | | - | 256,198 |
| Department of Transportation | | | | |
| Dwight David Eisenhower Transportation Fellowship Program Graduate Fellowship | 20.RD | 693JJ31845078 | - | 3,250 |
| University Transportation Center - Center for Connected Multimodal Mobility (C2M2) | 20.RD | 69A3551747117 | 46,660 | 437,252 |
| Pass-through programs from: | | | | |
| South Carolina Department of Transportation | | | | |
| Adaptive Signal System Safety Impacts | 20.RD | 1936; SPR 737 | - | 29,612 |
| Best Construction Practices for Longitudinal Joint Construction and Compaction | 20.RD | 1824; SPR No. 728 | - | 22,445 |
| Compliance with the United State Environmental Protection Agency (USEPA) Effluent Limitation Guidelines-Turbidity Control and Surface Outlets | 20.RD | 1573; SPR No. 702 | - | 106,071 |
| Cost Effective Strategies for Estimating Statewide AADT | 20.RD | 1691; SPR No. 717 | 9,780 | 76,494 |
| Cross-Slope Verification using Mobile Scanning on SCDOT Interstates | 20.RD | 1714; SPR No. 719 | 113 | 52,180 |
| Evaluation of Open Graded Friction Courses: Construction, Maintenance, and Performance, Phase II | 20.RD | 1781; SPR 725 | - | 84,675 |
| Innovative Bridge Research and Deployment Project (IBRD-2012) NEXT-D Implementation and Field Monitoring of Hanging Rock Creek Bridge | 20.RD | 1596; Proj No. 29L1CEBR29018 | - | 46,740 |
| Midblock Crash Analysis Using Precisely Geocoded Crashes | 20.RD | 1935; SPR 734 | - | 50,179 |
| Operational and Economical Analysis of Access Management | 20.RD | 1665; SPR No. 715 | - | 35,736 |
| SCDOT Asset Collection | 20.RD | 1692; SPR No. 716 | 41 | 99,371 |
| University of South Carolina | | | | |
| Assessment of Structural Degradation for Bridges and Culverts | 20.RD | 18-3551 PO#2000037629 | - | 9,724 |
| Calibration of the AASHTO Pavement Design Guide to South Carolina Conditions - Phase II | 20.RD | 17-3296/PO#2000031396/ USC#15520FB40 | - | 147,359 |
| University of Tennessee | | | | |
| Development of a Security Platform for Vehicles to Infrastructure Network | 20.RD | 13-Clemson-OE2/ 8500037533 | - | 10,147 |
| STC - Educational Component | 20.RD | | - | 1,623 |
| Wisconsin Department of Transportation | | | | |
| Evaluation of H-pile Corrosion Rates for Wisconsin Bridges Located in Aggressive Subsurface Environments | 20.RD | 0092-16-03 | - | 32,924 |
| Total Department of Transportation | | | 56,594 | 1,245,782 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of the Treasury | | | | |
| Mechanochromic Materials Research and Development Services Phase I | 21.RD | TEPA16-35712 | - | 5,829 |
| Total Department of the Treasury | | | - | 5,829 |
| National Aeronautics and Space Administration | | | | |
| A Sounding Rocket Investigation of Neutral Jets Associated with Auroral Arcs | 43.RD | NNX14AH09G | - | 11,663 |
| AZURE: Auroral Zone Upwelling Release Experiment | 43.RD | NNX15AL71G | 142,250 | 369,956 |
| CHASING THE MOST POWERFUL BLAZARS | 43.RD | NNX15AV09G | - | 6,478 |
| Chasing the Most Powerful Blazars - NRA/Research Opportunities in Space and Earth Sciences - 2015 (ROSES-2015) | 43.RD | NNX17AC35G | - | 32,812 |
| Chasing the Most Powerful Blazars (Cycle 3) | 43.RD | 80NSSC18K0580 | - | 16,557 |
| Compton Thick AGN: The Physics Behind the Obscuration | 43.RD | 80NSSC17K0635 | - | 28,000 |
| Control and Modeling of Extensible Continuum Robots - NSTRF for Chase Frazelle | 43.RD | 80NSSC17K0173 | - | 52,548 |
| Cosmic Chemical Memory and the Building Blocks of the Solar System | 43.RD | NNX17AE32G | - | 110,904 |
| CUSP Upwelling and Heating Due to Small Scale Electric Field Fluctuations | 43.RD | 80NSSC18K0781 | - | 1,765 |
| Full 3D Mapping and Identification of the >10 GE Extragalactic Sky Research Opportunities in Space and Earth Sciences - 2016 (ROSES - 2016) | 43.RD | 80NSSC17K0503 | - | 39,669 |
| GRBS as Cosmic Probes of the UV and Optical Background | 43.RD | 80NSSC17K0506 | - | 39,833 |
| Hunting High Redshift Blazars | 43.RD | 80NSSC17K0310 | - | 40,000 |
| NASA Space Technology Research Fellowships (NSTRF) - Fall 2014 | 43.RD | NNX14AN43H | - | 45,742 |
| NRI-Small: Long, Thin Continuum Robots for Space Applications | 43.RD | NNX12AM01G | - | 116,804 |
| ROSES 2015/Exoplanet Research Program - Direct Imaging and Interferometry of Proto-planets at the Epoch of Disk Clearing | 43.RD | NNX16AJ81G | - | 18,995 |
| ROSES-2014/Fermi Guest Investigator - Cycle 8 VERITAS OBSERVATIONS OF HARD NEW FERMI-LAT SOURCE | 43.RD | NNX15AU68G | - | 1,705 |
| ROSES-2015/Fermi Guest Investigator - Cycle 9 HUNTING HIGH-REDSHIFT BL LACERTAE OBJECTS | 43.RD | NNX16AR71G | - | 35,765 |
| ROSES-2015/Fermi Guest Investigator - Cycle 9 THE LAT ON STEROIDS AND THE ROLE OF GALAXIES IN THE UNIVERSE | 43.RD | NNX16AR72G | - | 23,978 |
| Roses-2015/SWIFT Guest Investigator - Cycle 12 ON THE ORIGIN OF TH EXTRAGALACTIC GAMMA-RAY AND NEUTRINO BACKGROUNDS | 43.RD | NNX16AN68G | - | 13,351 |
| Signature of Energy Dissipation in the Magnetosphere-Ionosphere-Thermosphere Coupled System | 43.RD | NNX17AG10G | - | 33,555 |
| Synthetic Biology for Recycling Human Waste into Nutraceuticals and Materials: Closing the Loop for Long-Term Space Travel | 43.RD | NNX15AU46G | - | 205,167 |
| Utilizing Space-Based Technology to Determine Hydrological Properties of Soils for Characterizing, Understanding, and Predicting Terrestrially Linked Components of the Hydrologic Cycle | 43.RD | NNX15AD47G | 28,094 | 207,007 |
| Pass-through programs from: | | | | |
| ASTRA | | | | |
| Transport, Chemistry, and Energetics of Water in the Mesosphere and Lower Thermosphere and Implications for Polar Mesospheric Cloud Occurrence | 43.RD | NNX16AF67G // Subcon #171-01 | - | 160,028 |
| College of Charleston | | | | |
| Biotransformation of Space Mission Organic Waste and Martian Regolith into Nutraceuticals and Biocement | 43.RD | 521192- | - | 23,327 |
| Carolina Eclipse Initiative: Radio Astronomy of the 2017 Total Solar Eclipse Over South Carolina | 43.RD | 521179-EC-CM2 | - | 3,725 |
| Carolina Eclipse Science Workshops for Upstate South Carolina Educators | 43.RD | 521179-EC-CM1 | - | 2,000 |
| Evaluation of Polyphenol Antioxidants to Lower Redox & Active Irons Levels and Prevent Oxidative Damage | 43.RD | 521192- | - | 24,822 |
| Graduate Research Assistantship: Application of Magnetic Rotational Spectroscopy for nanoTesla Magnetic and Viscosity Sensors | 43.RD | NONE | - | 1,040 |
| MiniREAP 2017: Microbial Fuel Cells with Peroxide Production for Space Life Support Systems Applications | 43.RD | 521179-RP- | - | 8,983 |
| Multi-Layer Magnetostrictive NDE/SHM Sensors | 43.RD | 521192- | - | 2,752 |
| Nanomaterials-Based Hybrid Energy Storage Devices and Systems for Space Applications | 43.RD | 521296-Clemson | - | 29,917 |
| Palmetto Academy 2017: In Situ Composite Manufacturing via Biocementation of Martian Soil | 43.RD | 521179-PA- | - | 13,006 |
| Palmetto Academy 2017: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications | 43.RD | 521179-PA | - | 24,000 |
| Palmetto Academy 2018: Creating a Kilonova Spectrum in the Laboratory | 43.RD | 521179-PA- | - | 6,971 |
| Palmetto Academy 2018: Microbial Peroxide-Producing Cells for Blackwater Treatment During Space Missions | 43.RD | 521179-PA- | - | 11,552 |
| Palmetto Academy 2018: Student Participation in Developing Nanomaterials-Derived Technologies for Space Applications | 43.RD | 521179-PA- | - | 6,400 |
| Regional Biomass Burning Measurements for Air Quality Assessment and Satellite Validation | 43.RD | 521192- | - | 174 |
| RockOn! 2018 Workshop Travel Funding | 43.RD | 521179-RO | - | 8,793 |
| SC Space Grant Campus Director Administrative Budget | 43.RD | 521179-CD-CM | - | 114 |
| SC Space Grant Consortium Graduate Research Assistantship | 43.RD | 521193-PA | - | 11,428 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina**Schedule of Expenditures of Federal Awards****For the year ended June 30, 2018**

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|------------------------------------|---|--|---------------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Aeronautics and Space Administration, continued | | | | |
| Pass-through programs from, continued: | | | | |
| Cornell University | | | | |
| Waves and Instabilities from a Neutral Dynamo (WINDY) | 43.RD | 73921-10522 | - | 139,193 |
| Freight Farms Incorporated | | | | |
| T6.04-980 Self-Sustaining Crop Production Unit | 43.RD | NNX16CA33P | - | 3,952 |
| Smithsonian Astrophysical Observatory | | | | |
| An Experimental Program to Achieve High Accuracy Atomic Rates for the X-ray | | | | |
| Astrophysics Recovery Mission (XARM) and Beyond | 43.RD | SV8-88008 | - | 33,031 |
| X-raying New Galactic Accelerators with Chandra (Proposal No. 18500092) | 43.RD | G07-18043X | - | 36,540 |
| Structured Materials Industries, Incorporated | | | | |
| High Power Ga203-based Schottky Diode | 43.RD | PO# SMI42070-060917-01 | - | 11,500 |
| The Aerospace Corporation | | | | |
| TOMEX Plus: Turbulent oxygen Mixing Experiment Plus | 43.RD | PO# 4600006190 | - | 17,014 |
| University of Alaska - Fairbanks | | | | |
| In-Situ Measurements of Neutral and Plasma Dynamics Associated with Earth's | | | | |
| Cusp-Region Thermospheric Mass Density Anomaly | 43.RD | UAF 18-0025 PO518692 | - | 39,289 |
| University of Central Florida | | | | |
| Leadership-Fellowship: Moving Beyond Traditional Leadership to Build Highly | | | | |
| Functional Autonomous Teams | 43.RD | 64016352-01 | - | 3,339 |
| University of Louisville | | | | |
| Short-term Tidal Variability from the Troposphere to the Dynamo Region | 43.RD | ULRF14-1328-01 | - | 74,756 |
| University of South Carolina | | | | |
| Explore a Unified, Ultra-efficient, and Gravity-Insensitive Flow Boiling Regime for | | | | |
| Space Missions | 43.RD | 15-2784 PO#91802 (15540 FC75) | - | 24,773 |
| Total National Aeronautics and Space Administration | | | 170,344 | 2,174,673 |
| Institute of Museum & Library Services | | | | |
| Pass-through programs from: | | | | |
| Virginia Polytechnic Institute | | | | |
| Identifying the Drivers of Success in Educational Programs at Nature Centers and | | | | |
| National Parks | 45.RD | 451438-19244 | - | 100,693 |
| Total Institute of Museum & Library Services | | | - | 100,693 |
| National Endowment for the Humanities | | | | |
| Pass-through programs from: | | | | |
| South Carolina Humanities | | | | |
| Black Clemson | 45.RD | 17-1762-3 | - | 2,000 |
| Total National Endowment for the Humanities | | | - | 2,000 |
| National Science Foundation | | | | |
| A Screened Lab Addition to Enhance New Ecological Research at Clemson's Baruch Institute | 47.RD | 1624705 | - | 123,902 |
| A Sustainable ATE Coordination Network for Enhancing Personalized Learning Using Virtual | | | | |
| and Augmented Reality- based Technology Innovations in Technical Education | 47.RD | 1700621 | - | 87,346 |
| ABR: Collaborative Research: Computational Jewelry for Mobile Health | 47.RD | 1619950 | 14,042 | 186,842 |
| ADVANCE Institutional Transformation at Clemson University | 47.RD | 1629934 | 8,284 | 469,867 |
| Advanced Cyberinfrastructure - Research and Educational Facilitation: | | | | |
| Campus-Based Computational Research Support | 47.RD | ACI-1341935 | 425,600 | 547,181 |
| AF: Medium: Collaborative Research: Sparse Polynomials, Complexity and Algorithms | 47.RD | CCF-1407623 | - | 60,111 |
| AF: Small: Subdivision Methods: Correctness and Complexity | 47.RD | 1527193 | - | 43,455 |
| AIR Option 2: Research Alliance Situational Intelligence for Smart Grid Optimization | | | | |
| and Intelligent Control | 47.RD | IIP-1312260 | - | 92,655 |
| AIR-TT: Ultrapure Lignins Recovered from Paper-Mill Black Liquors as Renewable | | | | |
| Biopolymers | 47.RD | 1701128 | - | 33,165 |
| Biomechanics of Self-Assembly of the Lepidopteran Feeding Device | 47.RD | PHY-1305338 | - | 2,212 |
| Broadening Participation in engineering: Workshop on Reducing Attrition in | | | | |
| Pre-calculus Pathways | 47.RD | 1737686 | - | 45,337 |
| Building Research Capacity for STEM Faculty Development | 47.RD | 1638888 | - | 16,639 |
| Capillary Channeled Polymer Structures and Chemistries for High Throughput | | | | |
| Measurement of Large Molecules | 47.RD | 1608663 | - | 93,372 |
| Capillary-Channeled Polymer Fibers: Chemistries and Structures for Protein Separations | | | | |
| and Analytics | 47.RD | CHE-1307078 | - | 89 |
| CAREER: Advancing the Mechanistic Understanding of Field-Scale Preferential Flow and | | | | |
| Transport Processes in Soils Using Geophysics | 47.RD | EAR-1151294 | - | 1,212 |
| CAREER: Cross-Layer Power-Bounded High Performance Computing on Emerging and | | | | |
| Future Heterogeneous Computer Clusters | 47.RD | 1551511 | - | 58,645 |
| CAREER: Electromechanical Transduction of Vibratory Energy Harvesters in Random and | | | | |
| Non-Stationary Environments | 47.RD | CMMI-1055419 | - | 78,920 |
| CAREER: Harnessing Hybrid Computing Resources in PetaScale Computing and Beyond | 47.RD | OCI-1149644 | - | 63,997 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------|--|---------------------------------|----------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Science Foundation, continued | | | | |
| CAREER: Hierarchical Mechanical Models of Cell Constructs | 47.RD | CBET-1254609 | - | 58,473 |
| CAREER: High Resolution Spectrochemical Imaging Through Tissue | 47.RD | CHE-1255535 | - | 58,150 |
| CAREER: Integrated Materials-Mechanics-Manufacturing Approach to Hot Blank - Cold Die (HB-CD) Forming of Lightweight Alloy Sheets | 47.RD | CMMI-1254670 | - | 43,492 |
| CAREER: Models for Supply Chain Design and Logistics Management of Biofuels | 47.RD | CMMI-1462420 | - | 728 |
| CAREER: Particle Magnetophoresis in Ferrofluid Microflows for Lab-on-a-Chip Applications | 47.RD | CBET-1150670 | - | 46,099 |
| CAREER: Student Motivation and Learning in Engineering | 47.RD | 1055950 | - | 22,779 |
| CAREER: Characterizing Nanoparticle Surface Interactions using Dissolution Dynamic Nuclear Polarization-Enhanced Nuclear Magnetic Resonance | 47.RD | 1751529 | - | 6,786 |
| CAREER: Cooperative Control and Decision-Making for Human-Agent Collaborative Teams | 47.RD | 1454139 | - | 91,911 |
| CAREER: Detecting Patterned Profiles for Functional and Dysfunctional Teamwork | 47.RD | 1654054 | - | 96,769 |
| CAREER: Elastocapillary fluid mechanics: spreading, splashing, and instability | 47.RD | 1750208 | - | 732 |
| CAREER: Empowering Students to be Adaptive Decision-makers | 47.RD | 1745347 | - | 59,675 |
| CAREER: Enabling Low-Cost, Maintenance-Free, Long-Term Embedded Sensing Without Batteries | 47.RD | 1453607 | - | 21,431 |
| CAREER: Hierarchical Modeling for Rational Catalyst Design in Aqueous Conditions | 47.RD | 1554385 | - | 94,656 |
| CAREER: Innovative Methods for Designing Adaptive Clinical Trials | 47.RD | 1651912 | - | 106,229 |
| CAREER: Large Scale Simulations Enabled Materials Engineering for Heterogeneous Ice Nucleation | 47.RD | 1653352 | - | 14,412 |
| CAREER: Leveraging the Three- Dimensional Multi-Stability from Origami Folding to Synthesize Multi-Functional Material Systems | 47.RD | 1751449 | - | 20,028 |
| CAREER: Multiscale Study of the Structure and Dynamics of Nanoparticle-Protein Coronae | 47.RD | 1553945 | - | 31,352 |
| CAREER: Perceptually Guided Hand Motion Synthesis | 47.RD | 1652210 | - | 40,921 |
| CAREER: Quantifying drought and vulnerability indicators for water security in a changing environment | 47.RD | 1653841 | - | 64,514 |
| CAREER: Quantifying the Adaptability of Building Structures, Envelopes, and Foundations | 47.RD | 1553565 | - | 121,793 |
| CAREER: Self-Protecting Artificial Implants and Invigorating the STEM Education Pipeline with Biomaterials | 47.RD | 1555224 | - | 138,791 |
| CAREER: Structural dynamics of post-translationally modified Calmodulin and its role in target recognition | 47.RD | 1749778 | - | 13,878 |
| Career: Towards Engineering Electronic Defects in Inorganic Luminescent Materials | 47.RD | 1653016 | - | 89,943 |
| Carolina Dynamics Symposium 2016-2018 | 47.RD | 1600746 | - | 6,877 |
| CC* Cyber Team: Cyberinfrastructure Empowerment for Diverse Research, Scholarship, and Workforce Development (CI Empower) | 47.RD | 1659297 | 26,598 | 100,110 |
| CC*Data: National Cyberinfrastructure for Scientific Data Analysis at Scale (SciDAS) | 47.RD | 1659300 | 327,587 | 633,319 |
| CC*IIIE Region: Southern Partnership in Advanced Networking (SPAN) | 47.RD | ACI-1440659 | 520 | 4,913 |
| CEDAR: Exploration of Lower-atmosphere Wave Forcing, Vertical Wave Coupling and Their Impacts on the Ionosphere and Thermosphere Variability Using WAM, Lidar and ISR | 47.RD | 1705448 | - | 760 |
| Center for Aviation and Automotive Technological Education Using Virtual E-School [CA2VES]: A Resource to Meet Technician Workforce Needs | 47.RD | 1501695 | 325,551 | 1,522,319 |
| CGV: Large: Collaborative Research: Modeling, Display, and Understanding Uncertainty in Simulations for Policy Decision Making | 47.RD | IIS-1212501 | - | 10,194 |
| CHS: Small: Looking Across the Uncanny Valley: Procedural and Data-Driven Methods for Gaze Modeling | 47.RD | 1423189 | - | 51,120 |
| CHS: Small: Investigating the Behavioral Effects of Longitudinal Exposure to Immersive Consumer Virtual Reality | 47.RD | 1717937 | - | 62,366 |
| CICI: Data Provenance: Collaborative Research: Provenance Assurance Using Currency Primitives | 47.RD | 1547164 | - | 44,895 |
| CICI: RSARC: Secure Time for Cyberinfrastructure Security | 47.RD | 1738902 | - | 198,901 |
| CNH-L: Coupled Social and Ecological Consequences of Conservation Easements | 47.RD | 1518455 | - | 146,765 |
| Collaborative Research: Communicating Hurricane Information to Local Officials for Protective Action Decision Making | 47.RD | SES-0838639 | - | (86) |
| Collaborative Research: Data Selection for Unique Model Identification | 47.RD | DMS-1419038 | - | 24,479 |
| Collaborative Research: Effects of Hydrologic Processes on In Situ Stress Transients | 47.RD | EAR-0944315 | - | 10,842 |
| Collaborative Research: Halocarbon Biogeochemistry in Coastal Wetland Ecosystems | 47.RD | 1529927 | - | 37,362 |
| Collaborative Research: II-NEW: Marcher - A Heterogeneous High Performance Computing Infrastructure for Research and Education in Green Computing | 47.RD | 1551262 | - | 4,676 |
| Collaborative Research: Intracellular Localization of Biosynthetic Pathways for Conversion of Lipids to Dicarboxylic Acids in Oleaginous Yeast | 47.RD | CBET-1403099 | - | 18,693 |
| Collaborative Research: Jicamarca Radar Studies of Gravity Waves from D Region to Lower F Region | 47.RD | AGS-1143514 | - | 15,363 |
| Collaborative Research: Systematic Review of Studies to Improve Success in STEM Degree Programs of Hispanic Students Matriculating through Two-Year Institutions | 47.RD | DUE-1446323 | - | 2,758 |
| Collaborative Research: US-Brazil IRES / Analytical Applications of Nanomaterials and Microfluidic Devices | 47.RD | 1565508 | - | 29,808 |
| Collaborative Research: An Intelligent Restoration System for a Self-healing Smart Grid (IRS-SG) | 47.RD | ECCS-1408141 | - | 70,017 |
| Collaborative Research: CICI: Regional: SouthEast SciEntific Cybersecurity for University REsearch (SouthEast SECURE) | 47.RD | 1642102 | - | 53,714 |
| Collaborative Research: CICI: Secure and Resilient Architecture: SciGuard: Building a Security Architecture for Science DMZ Based on SDN and NFV Technologies | 47.RD | 1642143 | - | 145,037 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Science Foundation, continued | | | | |
| Collaborative Research: Comprehensive Investigation of Midlatitude Ionospheric Irregularities | 47.RD | 1360594 | - | 64,999 |
| Collaborative Research: Controlling Cellular Physiology and Enzyme Localization for an Enhanced Oleochemical Biosynthesis in Yeast | 47.RD | 1706134 | - | 72,895 |
| Collaborative Research: CRISP Type 2: Coordinated, Behaviorally-Aware Recovery for Transportation and Power Disruptions (CBAR-tpd) | 47.RD | 1822436 | - | 582 |
| Collaborative Research: Dimensions US-BIOTAQ-Sao Paulo: Scales of Biodiversity-Integrated Studies of Snake Venom Evolution and Function Across Multiple Levels of Diversity | 47.RD | 1822417 | - | 23,075 |
| Collaborative Research: EAGER: Energy Harvesting via Thermo-Piezoelectric Transduction | 47.RD | 1549977 | - | 11,910 |
| Collaborative Research: Elucidating the chemical plasticity of fine roots in response to soil heterogeneities and developing a better parameter to forecast fine root decomposition | 47.RD | 1754679 | - | 15,820 |
| Collaborative Research: Exploring the Evolution of Design Requirements Throughout the Design Process Using Network Models | 47.RD | 1463370 | - | 50,933 |
| Collaborative Research: Heterogeneous Ice Nucleation in Clouds: A Synergistic Experimental and Simulation Approach | 47.RD | 1541944 | - | 39,371 |
| Collaborative Research: High Resolution Spectroscopy and Spectro-Astrometry of Warm Gas in Herbig Ae/Be Stars: A Search for Forming Gas Giant Planets | 47.RD | 1517014 | - | 127,979 |
| Collaborative Research: Intersectionality of Non-normative Identities in the Cultures of Engineering (InIce) | 47.RD | EEC-1428523 | 8,906 | 49,817 |
| Collaborative Research: IUSE: EHR: Engaged Student Learning Exploration and Design Tier: Engaging and Enabling Learners to Reason Logically about Code | 47.RD | 1611714 | - | 89,922 |
| Collaborative Research: Microbicidal Carbon Dots for Combating Anti-Biotic Resistance and Beyond | 47.RD | 1701424 | - | 1,824 |
| Collaborative Research: RAPID: Capturing a critical transition in fungal wood endophyte communities by rapid response sampling post hurricane in Puerto Rico | 47.RD | 1822081 | - | 13,088 |
| Collaborative Research: Selection Methods for Algebraic Design of Experiments | 47.RD | 1720341 | - | 27,676 |
| Collaborative Research: Student Perspectives on Researcher Identity and Transformed Epistemologies (SPRITE) | 47.RD | 1531607 | - | 72,910 |
| Collaborative Research: Uncovering the Dynamics and Functionality of Origami Structures and Materials | 47.RD | 1633952 | - | 62,642 |
| Collaborative Research: Understanding the Multiscale Behavior of Triboelectric Devices | 47.RD | 1662587 | - | 4,700 |
| Collaborative Research: Variational Structure Preserving Methods for Incompressible Flows: Discretization, Analysis, and Parallel Solvers | 47.RD | 1522191 | - | 88,409 |
| Collaborative Research: What Do Leaders Want?: Collecting and Coding Issue Positions and Demands in the Militarized Interstate Dispute (MID) Data, 1816-2010 | 47.RD | 1729138 | - | 21,731 |
| Collaborative Research: Who's Not at the Table? Building Research Capacity for Underserved Communities in Engineering | 47.RD | 1551605 | - | 15,940 |
| Collaborative Research: A Long-Term Investigation of Auroral and Tidal Forcing of E-Region Thermospheric Winds at High Latitudes | 47.RD | 1552214 | - | 44,302 |
| Computational-Experimental Insight across Time and Length Scales of Dynamics in Ionic Polymers | 47.RD | 1611136 | - | 59,354 |
| Conductance Variability in Non-Conjugated Polymers: Memristors for Neuromorphic Applications | 47.RD | 1507266 | - | 123,724 |
| CPS: Synergy: Collaborative Research: Semi-Automated Emergency Response System | 47.RD | 1812524 | 84,074 | 91,305 |
| CPS: Synergy: Security of Distributed Cyber-Physical Systems with Connected Vehicle Applications | 47.RD | 1544910 | - | 131,696 |
| CRII: CHS: Collaboratively Perceiving, Comprehending, and Projecting into the Future: Supporting Team Situational Awareness with Adaptive Collaborative Tactons | 47.RD | 1566346 | - | 33,970 |
| CRII: CHS: Recommender Systems for Self-Actualization | 47.RD | 1565809 | - | 69,425 |
| CRISP Type 1: Data-driven Real-time Simulation for Adaptive Control of Interdependent Infrastructure Systems | 47.RD | 1638321 | - | 231,375 |
| CS For All: RPP: A Scalable RPP for Preparing and Supporting Teachers to Teach Culturally Responsive and Rigorous CS Courses in SC High Schools | 47.RD | 1738760 | - | 174,329 |
| CSBR: Natural History: Expanding the footprint and the reach of the Clemson University Arthropod Collection | 47.RD | 1457909 | - | 101,001 |
| CSR: Large: Collaborative Research: Computational Jewelry for Mobile Health | 47.RD | CNS-1314342 | - | 1,182 |
| CSR: Large: Collaborative Research: Smart Earpiece for Supporting Healthy Eating Behaviors | 47.RD | 1565268 | - | 104,837 |
| CyberSEES: Type 1: Enabling Sustainable Water Supplies Through Self-Powered Sensor-Based Monitoring | 47.RD | 1539536 | - | 159,028 |
| De Branges Spaces as Models for a General Theory of Function Spaces | 47.RD | 1600874 | - | 31,928 |
| Digitization TCN: Collaborative Research: The Key to the Cabinets: Building and Sustaining a Research Database for a Global Biodiversity Hotspot | 47.RD | EF-1410094 | 17,396 | 30,585 |
| Dimensions: Collaborative Research: Functional Diversity of Chemosymbiosis in Lucinid Bivalves from Coastal Biomes | 47.RD | 1342763 | - | 116,615 |
| Disentangling the Ecological Drivers of Teleost Body Form Diversity | 47.RD | 1830127 | - | 63,202 |
| DMREF: Collaborative Research: An Integrated Multiscale Modeling And Experimental Approach To Design Fouling-Resistant Membranes | 47.RD | 1534304 | - | 126,631 |
| EAGER CHS: Examining Self-Harm and Suicide Contagion Risks of Viral Social Media Challenges on Youth and Young Adults | 47.RD | 1832904 | - | 188 |
| EAGER: Advancing Understanding of Function Modeling, Reasoning, and Thinking in Design by Mapping Behaviors to Cognitive Explanations | 47.RD | 1547236 | - | 40,950 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Science Foundation, continued | | | | |
| EAGER: Autonomous Self-Healing of Commodity Acrylic Copolymers | 47.RD | 1744306 | - | 116,509 |
| EAGER: Building a Framework to Advance Research through Undergraduate Participation: Investigating pH in 3D Tissue Test Systems | 47.RD | CBET-1451319 | - | 4,679 |
| EAGER: Characterization, Prediction, and Management of Latency Variation in Virtualized HPC and Warehouse Scale Systems | 47.RD | 1642542 | - | 122,434 |
| EAGER: Collaborative: PRICE: Using Process Tracing to Improve Household IoT Users' Privacy Decisions | 47.RD | 1640664 | - | 84,309 |
| EAGER: Control Theory for Real-time Privacy-preserving Consensus Control of Engineering Networks | 47.RD | 1824014 | - | 24,885 |
| EAGER: Corrosion Reduction in Reinforcing Steel of Concrete Structures Through Grain Size Alteration | 47.RD | 1552794 | - | 62,575 |
| EAGER: Defending Against Visual Cyberbullying Attacks in Emerging Mobile Social Networks | 47.RD | 1537924 | - | 123,503 |
| EAGER: Evaluating the Feasibility of Estimating Cognitive Load Using Microsaccadic Eye Motion and Oscillation in Pupil Diameter | 47.RD | 1748380 | - | 69,023 |
| EAGER: Feedback-based Network Optimization for Smart Cities | 47.RD | 1647361 | - | 82,493 |
| EAGER: SSDIM: Multiscale Methods for Generating Infrastructure Networks | 47.RD | 1745300 | - | 53,621 |
| EAGER: Towards a Traffic Analysis Resistant Internet Architecture | 47.RD | 1643020 | - | 72,510 |
| Eighth Annual Graduate Student Mini-conference in Computational Mathematics; Clemson, SC; February 5-6, 2016 | 47.RD | 1547107 | - | 349 |
| Enhanced Production of Advancing Biofuels Through Model Guided Synthetic Biology | 47.RD | CBET-1437836 | - | 72,092 |
| Evaluating Sustainable Disposable Options for Compostable Biopolymers | 47.RD | 1553126 | - | 33,152 |
| Explaining Choice, Persistence, and Attrition of Black Students in Electrical, Computer, and Mechanical Engineering | 47.RD | 1734347 | 9,130 | 23,913 |
| Fast Algorithms for Large-Scale Nonlinear Algebraic Eigenproblems | 47.RD | 1719461 | - | 20,563 |
| Fast and Scalable Multigrid Methods for Hypergraph Partitioning Problems | 47.RD | 1522751 | - | 63,725 |
| Fluorescent Polymer Nanoparticles for Nano-Imaging and Sensing | 47.RD | CHE-1412694 | - | 52,900 |
| Fundamental Study of Nonlinear Electrokinetic Phenomena in Insulator-based Dielectrophoretic Microdevices | 47.RD | 1704379 | - | 28,971 |
| Geometry of Measures and Regularity of Associated Operators | 47.RD | 1830128 | - | 14,115 |
| GOALI: Tuning Renewable Solvent Systems for Lignin Purification and Fractionation | 47.RD | CBET-1403873 | - | 20,652 |
| GP-EXTRA: Building An Affective Pathway To The Geosciences Through Experiential Learning Opportunities For Non-Geoscience Majors | 47.RD | 1540702 | - | 196,979 |
| Graduate Research Fellowship | 47.RD | 1246875 & 1744593 | - | 100,453 |
| Graduate Research Fellowship Program | 47.RD | 1246875 & 1744593 | - | 138,279 |
| Graduate Research Fellowship Program (GRFP) | 47.RD | 1246875 & 1744593 | - | 35,806 |
| Growth Rates of Bacterial Taxa in Coastal Marine Ecosystems | 47.RD | OCE-1261359 | 3,975 | 10,063 |
| Highly Conductive Reduced Graphene Oxide Films for High Performance Electronic Devices | 47.RD | 1538215 | 78,098 | 90,572 |
| High-Strength Carbon Fibers from Eco-Friendly Processing of Biomass | 47.RD | 1462804 | - | 120,796 |
| Hydrothermal Brines: New Media for the Synthesis and Crystal Growth of Materials | 47.RD | 1808371 | - | 8,371 |
| I/UCRC Phase II: Collaborative Research: Ceramic, Composite and Optical Materials Center | 47.RD | 1540025 | - | 32,970 |
| II NEW: Infrastructure to Support Research in Network-Aware Data-Intensive Computing | 47.RD | CNS-1405767 | - | 268,752 |
| III: CGV: Medium: Collaborative Research: Computational Design and 3D Printing of Textiles | 47.RD | 1722997 | - | 30,751 |
| III: Small: Collaborative Research: Privacy-Aware Collaborative Data Sharing in Human-Centered Social Networks | 47.RD | 1527421 | - | 99,128 |
| Impact of Nonmigrating Tides on the Thermospheric Energy Budget and Constituents | 47.RD | AGS-1112704 | - | 73,974 |
| Instrument Development: Ultra-Sensitive, Single-Pass Electron Paramagnetic Resonance Spectrometers | 47.RD | CHE-1152892 | - | 18,853 |
| Interaction of Tool Wear and the Machining Affected Zone in Nickel-Based Superalloys | 47.RD | 1760809 | - | 8,182 |
| Investigating Functional Peptides for Asymmetric Hypervalent Iodine Catalysis | 47.RD | 1664920 | - | 113,164 |
| IRES: Call Me Glober-Under-represented Undergraduate Bioengineering Research in Singapore | 47.RD | 1460110 | - | 41,404 |
| IUI Track-2 FEC: The Creation of Next-Generation Tools for Neuroscience- Noninvasive Radioluminescence Approaches to Optogenetics | 47.RD | 1632881 | 965,682 | 1,535,995 |
| IUSE/ PFE: RED: Clemson University: Learning Teams and Innovation Ventures for Adaptable Training in Engineering (CULTIVATE) | 47.RD | 1730576 | - | 184,694 |
| IUSE: EHR: Enabling Field Experiences in Introductory Geoscience Classes Through the Use of Virtual Reality | 47.RD | 1504619 | - | 26,121 |
| IUSE: Understanding and Propagating the Essence of Successful Computing Education Projects | 47.RD | 1646691 | - | 7,421 |
| Large Scale Networking (LSN) Workshop on Operationalizing SDN | 47.RD | 1747856 | - | 56,144 |
| Material Removal and Ejection Dynamics in Femtosecond Laser Machining of Microchannels in Transparent Materials | 47.RD | 1563426 | - | 84,734 |
| MCA-PGR: Spatial and Temporal Resolution of mRNA Profiles During Early Nodule Development | 47.RD | 1444461 | - | 443,303 |
| Mechanics of Locomotion with Nonholonomic Constraints in a Fluid | 47.RD | 1563315 | - | 71,658 |
| Mechanism for Heterogeneously Catalyzed Sugar Alcohol Reactions: Hierarchical Modeling and Experimental Studies | 47.RD | CBET-1438325 | - | 70,063 |
| Mechanisms of Fluid Feeding in Insects, from Nanoscale to Organism | 47.RD | IOS-1354956 | 25,018 | 166,910 |
| Methods Development for Systematic Investigation of Factors Driving Outcomes in Informal STEM Environmental Education Programs | 47.RD | 1612416 | 61,953 | 178,104 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Science Foundation, continued | | | | |
| Modeling of the Subgrid-Scale Pressure-Strain-Rate Correlation in the Atmospheric Surface Layer | 47.RD | AGS-1335995 | - | 25,815 |
| Molecular Dynamics Simulations and Small Angle Neutron Scattering Studies of Light-Emitting Polymeric Nanoparticles | 47.RD | CHE-1308298 | - | 22,210 |
| MRI: Acquisition of a 500 MHz Nuclear Magnetic Resonance (NMR) Spectrometer with Cryoprobe | 47.RD | 1725919 | - | 478,169 |
| MRI: Acquisition of a Cyberinstrument for Interdisciplinary Computational Science and Engineering | 47.RD | 1725573 | - | 994,161 |
| Multi-Point Monin-Obukhov Similarity and Spectral Dynamics in the Convective Atmospheric Surface Layer | 47.RD | 1561190 | - | 82,665 |
| New Methods for Studying the Time-Dependent and Steady-State Behavior of Markov Chains | 47.RD | CMMI-1435261 | - | 18,533 |
| Novel Graphene-based Label-free Biosensor Array for Smart Health and Drug Discovery | 47.RD | 1606882 | 52,985 | 109,072 |
| Novel Optical Hosts: Chemistry, Single Crystal Growth and Applications | 47.RD | DMR-1410727 | - | 96,630 |
| NRI:FND:COLLAB: Drones and the Design of Public Outdoor Spaces | 47.RD | 1734247 | - | 54,643 |
| NRT-DESE: Preparing Resilient and Operationally Adaptive Communities through an Interdisciplinary, Venture-based Education (PROACTIVE) | 47.RD | 1633608 | - | 418,080 |
| NSF Graduate Research Fellowship Program | 47.RD | 1246875 & 1744593 | - | 47,555 |
| NSF Graduate Research Fellowship Program | 47.RD | 1744593 | - | 177,891 |
| NSF INCLUDES DDLP Statewide Consortium: Supporting Underrepresented Populations in Precalculus by Organizational Redesign toward Engineering Diversity | 47.RD | 1744494 | 745 | 38,818 |
| NSF Student Travel Grant for 2018 ACM International Workshop on Security in Software Defined Networks and Network Function Virtualization(SDN-NFV Security) | 47.RD | 1807103 | - | 3,538 |
| NSF/DOE Partnership on Advanced Combustion Engines: Thermal Barrier Coatings for the LTC Engine - Heat Loss, Combustion, Thermal vs. Catalytic Effects, Emissions, Exhaust Heat | 47.RD | 1258714 | 17,856 | 17,411 |
| Number Theory Meetings in the Southeast | 47.RD | 1701290 | - | 16,295 |
| Numerical Methods for Non-Newtonian Fluid Structure Interaction Problems | 47.RD | DMS-1418960 | - | 47,408 |
| Optical Carrier Based Microwave Interferometry for Spatially Continuous Distributed Monitoring of Structural Health | 47.RD | CMMI-1359716 | - | (2,243) |
| PFI: AIR Technology Translation - Functionalized III-V Nitride Based Microelectromechanical Sensors for Neutron Detection | 47.RD | 1512342 | - | 19,258 |
| PFI: AIR Technology Translation - Functionalized III-V Nitride Based Microelectromechanical Sensors for Neutron Detection | 47.RD | IIP-1512342 | - | 1,972 |
| PFI: AIR-TT: Microwave Flow Cytometer: Monitor Yeast Cell Growth and Microbial Contamination in Fermentation | 47.RD | 1640578 | - | 22,331 |
| PFI:AIR - TT: Novel Low-Power III-Nitride Heater Cantilever Based Selective VOC Sensor | 47.RD | 1602006 | - | 109,692 |
| PFI:AIR-TT: Translation of Multimodal Membrane Adsorbers for Protein Purifications | 47.RD | 1640645 | - | 53,758 |
| Phase I/UCRC Clemson University Site: Advanced Mammalian Biomanufacturing Innovation Center (AMBIC) | 47.RD | 1624641 | - | 90,884 |
| Quantifying Dense Gas Dispersion in Urban Areas | 47.RD | 1703548 | - | 41,291 |
| RAPID proposal: Impact of Storm Surge on Coastal Forest Demography in Response to Repeated Hurricane Disturbances | 47.RD | 1725377 | - | 69,206 |
| RAPID: Airborne Measurements of Black Carbon Aerosol and Its Mixing State Over the Eastern Pacific/Central Coast of California | 47.RD | 1833008 | - | 19,710 |
| RAPID: Cascading of Extreme Events (Drought-Wildfire) in a Pristine Watershed Located in the Southeast US: Implication on Hydrology, Water Quality and Microbial Communities | 47.RD | 1722482 | - | 37,059 |
| RAPID: Severe Drought and Historical Extreme Flood (October 1-4, 2015) Regime in South Carolina: Assessment of the Water Quality Situation | 47.RD | 1602451 | - | 1,206 |
| RCN: Advancing Research and Education Through a National Network of Campus Research Computing Infrastructures - The CaRC Consortium | 47.RD | 1620695 | 23,398 | 171,478 |
| REU Site: Undergraduate Research in Collaborative Data Visualization Applications | 47.RD | ACI-1359223 | - | 33,807 |
| REU Site: Interfaces and Surfaces | 47.RD | 1460863 | - | 55,974 |
| REU Site: Solid-State Devices for Electronics, Photonics, and Magnetics Technology | 47.RD | 1560070 | - | 127,708 |
| REU Site: Summer Undergraduate Research Program at Clemson University | 47.RD | 1560300 | - | 108,738 |
| REU site: Undergraduate Research in Biological Sciences: From Genomes to Phenomes - Exploring Function Across Scales | 47.RD | 1460895 | - | 130,897 |
| Reversible Anion and Ion-Pair Recognition under Electronic Control | 47.RD | 1660329 | - | 82,245 |
| RI: Small Dynamic Payload Transport and Manipulation by Teams of Cooperating Mobile Robotic-Cranes | 47.RD | 1710898 | - | 105,871 |
| RI: Small: Collaborative Research: A Modular Approach to Robot Systems Incorporating Compliant and Soft Elements | 47.RD | 1718075 | - | 5,577 |
| RI: Small: Vine-Like Continuum Robots | 47.RD | 1527165 | - | 103,510 |
| RII Track 1: Materials Assembly and Design Excellence in South Carolina: MADE in SC | 47.RD | OIA- 1655740 | - | (1,818) |
| RII Track-2 FEC: Advanced Biomanufacturing: Catalyzing Improved Host Development and High Quality Medicines through Genome to Phenome Predictions | 47.RD | OIA-1736123 | 346,286 | 887,296 |
| Role of Cell Volume Changes in Mechanotransduction of Hydrostatic Pressure | 47.RD | CBET-1264579 | - | 8,777 |
| RTG: Coding Theory, Cryptography, and Number Theory | 47.RD | 1547399 | - | 374,233 |
| SaTC: EDU: Collaborative: Enhancing Security Education through Transiting Research on Security in Emerging Network Technologies | 47.RD | 1723663 | - | 13,131 |
| Scalable Intelligent Power Monitoring and Optimal Control of Distributed Energy Systems Using Adaptive Critics | 47.RD | ECCS-1308192 | - | (684) |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Science Foundation, continued | | | | |
| SDI-CSCS: Collaborative Research: S2OS: Enabling Infrastructure-Wide Programmable Security with SDI | 47.RD | 1700499 | - | 53,181 |
| Self-Healing Photochromic Polymeric Coatings | 47.RD | CMMI-1332964 | - | 4,682 |
| SHB: Type II (INT): Collaborative Research: Creating Learning Systems with Mobile Technology to Improve Perioperative Services | 47.RD | IIS-1237077 | - | 54,040 |
| SHF: Medium: Collaborative Research: Specification and Mathematics Engineering for the Verified Software End-Game | 47.RD | CCF-1161916 | - | 4,318 |
| Simulation-Based Design of Polymer Nanocomposites for Structural Applications | 47.RD | 1563435 | - | 127,976 |
| SNM: Defect-Engineered Nanocarbons for Electrochemical Energy Storage | 47.RD | CMMI-1246800 | 30,734 | 32,428 |
| SusChEM: Sustainable Chemistry from Combined Inorganic and Organic Waste Precursors | 47.RD | 1708844 | - | 115,685 |
| Topics in Algebraic Geometry Codes | 47.RD | DMS-1403062 | - | 37,034 |
| Toward Commercialization of the Carbon Dots Technology | 47.RD | 1749313 | - | 3,989 |
| TUES Type 1: Robots in Business and Society - A Hands-On Learning Experience | 47.RD | DUE-1245250 | - | 17,785 |
| TUES: Collaborate Research: Integrating Sustainability Grand Challenges and Experiential Learning into Engineering Curricula | 47.RD | 1620922 | 5,261 | 25,811 |
| TWC: Medium: Collaborative: Studying Journalists to Identify Requirements for Usable, Secure, and Trustworthy Communication | 47.RD | 1513875 | - | 111,019 |
| Understanding and Manipulating Charge and Entropy Flows in Layered Structured Transition Metal Dichalcogenides by and for Thermoelectricity: A Multi-Scale Materials Chem. Approach | 47.RD | DMR-1307740 | - | 22,583 |
| UNS: Formation and Toxicity of Disinfection Byproducts in Desalinated Waters | 47.RD | 1511051 | 20,112 | 32,815 |
| UNS: High-performance Membranes for Engineered Osmosis | 47.RD | 1510790 | - | 74,387 |
| Unveiling The Cosmic History of Light | 47.RD | 1715256 | - | 54,596 |
| US Ignite: Track 1: Enabling Connected Vehicle Applications through Advanced Network Technology | 47.RD | 1531127 | - | 251,632 |
| Using Ultra Violet Light to Produce Layered Fiber Reinforced Materials Derived from Biological Sources | 47.RD | 1537756 | - | 124,692 |
| Workshop: Summer School on Methods for Case, Protocol, and Controlled Experiment Research on Design and Systems Engineering; Clemson, South Carolina; May 14-26, 2017 | 47.RD | 1740217 | - | 7,709 |
| Pass-through programs from: | | | | |
| BWX Technology Incorporated | | | | |
| Fabricating Uranium Mononitride Powder and Microsphere Using Sol-Gel Processing | 47.RD | PO # 4900017542-0 | - | 339,209 |
| Carnegie Mellon University | | | | |
| Learning to See Seeing to Learn: A Sociotechnical System Supporting Taxonomic Identification Activities in Volunteer-Based Water Quality Biomonitoring | 47.RD | 1122371-358369 | - | 52,997 |
| Learning to See Seeing to Learn: A Sociotechnical System Supporting Taxonomic Identification Activities in Volunteer-Based Water Quality Biomonitoring | 47.RD | 1122372-373003 | - | 4,886 |
| Cornell University | | | | |
| SCH: EXP: Home+, An Intelligent and Interoperable Suite of Robotic Furnishings, Learning and Evolving with Their Users | 47.RD | 81402.10758 | 2,234 | 32,597 |
| Engineered Marine Coatings, Incorporated | | | | |
| Marine Antifouling Deterrent Coatings - Subcontract for Quantum Paints | 47.RD | NONE | - | 91,294 |
| Florida Atlantic University | | | | |
| MRI - Development of the Intelligent River, A Basin-Scale Monitoring Instrument | 47.RD | CRJ85 | - | 65,192 |
| GATS, Incorporated | | | | |
| Life-Cycle of the Quasi Two-Day Wave in the Southern Hemisphere | 47.RD | GATS_SC_160003 | - | 17,162 |
| Louisiana Tech University | | | | |
| Sophomore Fast-Forward: A Summer Bridge Program to Support Retention in Engineering | 47.RD | 32-0969-54130-CU | - | 8,668 |
| Medical University of South Carolina | | | | |
| RII Track-2 FEC: Bridging Cognitive Science and Neuroscience Using Innovative Imaging Technologies (Year 2 & 3) | 47.RD | MUSC16-074-8B357 | - | 14,964 |
| Northern Arizona University | | | | |
| Digitization TCN: Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores | 47.RD | 1003017.02 | - | 3,174 |
| Northwestern University | | | | |
| DMREF: Simulation-Driven Design of Highly Efficient MOF/ Nanoparticle Hybrid Catalyst Materials | 47.RD | SP0023246-PROJ0006614 | - | 8,309 |
| Prasidix | | | | |
| SBIR Phase II: Development of Polymer Gel-Based Indicators to Monitor the Exposure of Pharmaceuticals to Harmful Temperatures | 47.RD | PSXSUB003 | - | 27,651 |
| Purdue University | | | | |
| Expanding Access to and Participation in the Multiple-Institution Database for Investigating Engineering Longitudinal Development | 47.RD | 4101-77545 | - | 10,371 |
| Hazards Sees: Bridging Information, Uncertainty, and Decision-Making in Hurricanes using and Interdisciplinary Perspective | 47.RD | 4101-84811 | - | 7,703 |
| South Carolina State University | | | | |
| A Partnership in Observational and Computational Astronomy II (POCA II) | 47.RD | 15-586021-BAPS-CU-SC | - | 14,907 |
| Louis Stokes South Carolina Alliance for Minority Participation (SCAMP): A Senior Alliance Enhancing Opportunities to Transition Students into Success STEM Pathways | 47.RD | 17-581054-SCAMP-Clemson-SC | - | 14,795 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| National Science Foundation, continued | | | | |
| Pass-through programs from, continued: | | | | |
| The Samuel Roberts Noble Foundation | | | | |
| Research - PGR Function Genomics of Beneficial Legume Microbe Interactions | 47.RD | 2017-G04-003 | - | 101,597 |
| University of San Diego | | | | |
| Collaborative Research: Military Veteran Students' Pathways in Engineering Education | 47.RD | 140065-U2015-001 | - | 27,425 |
| University of California Davis | | | | |
| Computational Infrastructure for Geodynamics | 47.RD | 201504240-01 | - | 41,278 |
| University of Florida | | | | |
| NSF INSPIRE: Virtual Environment Interactions: Exploring Embodied Learning in Support of Computational Thinking | 47.RD | UFDSP00010994 | - | 2,038 |
| University of South Carolina | | | | |
| RII Track 1: Materials Assembly and Design Excellence in South Carolina: MADE in SC | 47.RD | 18-3494 22000-FB02/ PO#2000036759 | - | 475,181 |
| University of Texas Austin | | | | |
| Campus Bridging for Stampede | 47.RD | UTA13-000068 | - | 639 |
| Sequencing a Reference-grade Genome of the Domesticated Allotetraploid Cotton | 47.RD | UTA15-000467 (1444552) | - | 108,282 |
| University of Utah | | | | |
| CloudLab Phase II: Community Infrastructure to Expand the Frontiers of Cloud Computing Research | 47.RD | 10045119-CLEM PO# U000099152 PO# 166490 | - | 953,616 |
| CloudLab: Flexible Scientific Infrastructure to Support Fundamental Advances in Cloud Architectures and Applications | 47.RD | 10034358-CLEM | - | 72,645 |
| CNH-L: Adaptation, Mitigation, and Biophysical Feedbacks in the Changing | | 10040652-CU | | |
| Bonneville Salt Flats | 47.RD | PO # U000094568 | - | 41,035 |
| Virginia Polytechnic Institute | | | | |
| RAPID: Integrated Geotechnical and Geophysical Field Data Collection to Investigate Scour and Post-event Infilling at Subaqueous Foundations, Levees and River Banks impacted by Hurricane Harvey | 47.RD | 479908-19244 | - | 6,550 |
| Washington State University | | | | |
| CIF21 DIBBS TriPal Gateway: Platform for Next Generation Data Analysis and Sharing | 47.RD | 123507_G003405 | - | 10,871 |
| Total National Science Foundation | | | 2,882,025 | 23,427,314 |
| Tennessee Valley Authority | | | | |
| Establish a Landscape Conservation Fellowship for the Tennessee River Basin Biodiversity Network | 62.RD | 13373 PO#3980142 | - | 24,379 |
| Total Tennessee Valley Authority | | | - | 24,379 |
| Department of Veterans Affairs | | | | |
| Grants for Adaptive Sports Programs for Disabled Veterans and Disabled Members of the Armed Forces | 64.RD | 2018-ASG-20 | - | 93,212 |
| Targeted Delivery of Antioxidant Drugs Following Cerebral Ischemic Injury | 64.RD | PO# 673-D75006 | - | 61,418 |
| Total Department of Veterans Affairs | | | - | 154,630 |
| Environmental Protection Agency | | | | |
| Forest Watershed Mgmt Practices & DW Quality | 66.RD | CR-83586401 | 18,956 | 299,923 |
| Partnerships for Sustainability: P2 Education and Assessment | 66.RD | NP00D22514 | - | 5,498 |
| Pollution Prevention Incentives States | 66.RD | 00D41717 | - | 19,363 |
| Pass-through programs from: | | | | |
| eXtension Foundation | | | | |
| Pesticide Safety | 66.RD | SA-2017-45 | - | 8,304 |
| Friends of Lake Keowee Society, Incorporated | | | | |
| Cane Creek Watershed Based Plan Development | 66.RD | EQ-7-791 | - | 23,950 |
| South Carolina Department of Health and Environmental Control | | | | |
| South Carolina Volunteer Stream Monitoring Program (SC Adopt-a-Stream) | 66.RD | NONE | - | 2,867 |
| Total Environmental Protection Agency | | | 18,956 | 359,905 |
| Nuclear Regulatory Commission | | | | |
| Clemson University Nuclear Engineering and Radiological Sciences Scholarship Program | 77.RD | NRC-HQ-84-14-G-0021 | - | 46,808 |
| Probabilistic Risk Assessment Faculty Development in Nuclear Engineering and Science Program at Clemson University | 77.RD | NRC-HQ-13-G-38-0002 | - | 7,985 |
| US NRC Fellowship Grant at Clemson University | 77.RD | NRC-HQ-12-G-38-0016 | - | 35,672 |
| Total Nuclear Regulatory Commission | | | - | 90,465 |
| Department of Energy | | | | |
| A New Paradigm for Understanding Multi Phase Ceramic Waste Form Performance | 81.RD | DE-NE0008260 | 45,126 | 107,850 |
| All-Digital Plug and Play Passive RFID Sensors for Energy Efficient Building Control | 81.RD | DE-EE0007683 | 115,482 | 335,592 |
| Alternative Sample Loading Preparation for Thermal Ionization Mass Spectrometry | 81.RD | DE-NA0001735 | - | (128) |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Energy, continued | | | | |
| Boosting Energy Efficiency of Heterogeneous Connected Automated Vehicle (CAV) Fleets via Anticipative and Cooperative Vehicle Guidance | 81.RD | DE-EE0008232 | 15,000 | 331,041 |
| Breeding High Yielding Bioenergy Sorghum for the New Bioenergy Belt | 81.RD | DE-AR0000595 | 1,287,614 | 1,804,266 |
| Characterizing and Interpreting the In Situ Strain Tensor During CO2 Injection | 81.RD | DE-FE0023313 | 9,794 | 229,199 |
| Energize: An Interactive Evaluation Tool for Engaging the General Public with Energy Decision Making | 81.RD | DE-NE0008568 | - | 133,732 |
| Energy Efficiency for the Growing South Carolina Manufacturing Industries | 81.RD | DE-EE0007727 | - | 190,934 |
| Examination of Actinide Chemistry at Solid-Water Interfaces to Support Advanced Actinide Separations | 81.RD | DE-SC0010355 | - | 158,727 |
| First-Principles Calculation of Vibrational Mode in Complex Materials | 81.RD | DE-SC0008487 | - | 125,596 |
| Fully Integrated High Speed Megawatt Class Motor and High Frequency Variable Speed Drive System | 81.RD | DE-EE0007254 | 146,132 | 898,883 |
| Functionally Designed Ultra-Lightweight Carbon Fiber Reinforced Thermoplastic Composites Door Assembly | 81.RD | DE-EE0007293 | 206,629 | 415,414 |
| High-Temperature Atmosphere-Controlled Raman Microscope for Fuel Cycle Materials Research | 81.RD | DE-NE0008675 | - | 128,566 |
| Hydrogen Isotope Fractionation Using Graphene and Related 2-D Materials | 81.RD | DE-SC0018151 | - | 119,689 |
| Integrated Process Optimization for Biochemical Conversion | 81.RD | DE-EE0008255 | - | 18,499 |
| Integrated TBC/EBC for SiC Fiber Reinforced SiC Matrix Composites for Next Generation Gas Turbines | 81.RD | DE-FE0031281 | - | 86,269 |
| Lower Length Scale Characterization and Validation of Formation and Stability of Helium Bubbles in Nano-structured Ferritic Alloys Under Irradiation | 81.RD | DE-NE0000728 | - | 60,771 |
| Nano-structured Ceramic Membranes for Enhanced Tritium Management | 81.RD | DE-NE0008703 | - | 81,698 |
| Novel High Temperature and Radiation Resistant Infrared Glasses and Optical Fibers for Sensing in Advanced Small Modular Reactors | 81.RD | DE-NE0000727 | 44,376 | 46,817 |
| Radionuclide Waste Disposal: Development of Multi-scale Experimental and Modeling Capabilities | 81.RD | DE-SC0012530 | 211,170 | 1,187,362 |
| Robust Extractive Scintillating Resin and Adsorptive Membranes for Plutonium Isotopic Analyses of Aqueous Media | 81.RD | DE-NA0002920 | - | 250,800 |
| Robust in Situ Strain Measurements to Monitor Carbon Dioxide (CO2) Storage | 81.RD | DE-FE0028292 | - | 97,564 |
| Sampling Rare Events In Aqueous Systems Using Molecular Simulations | 81.RD | DE-SC0015448 | - | 65,654 |
| Synthesis and Single Crystals of Refractory Oxides of Lanthanides and Thorium | 81.RD | DE-SC0014271 | - | 152,307 |
| Pass-through programs from: | | | | |
| Alliance for Sustainable Energy LLC | | | | |
| Understanding the Role of Short-Term Energy Storage and Large Motor Loads for Active Power Controls by Wind Power | 81.RD | XDJ-6-62584-01 | - | (1,366) |
| Battelle Memorial Institute-PNNL | | | | |
| Improved TRL of the LS-APGD Microplasma Ionization Source | 81.RD | 394845; Clemson, SC USA | - | 4,068 |
| Clemson University Research Foundation | | | | |
| GATE Center of Excellence in Sustainable Vehicle Systems | 81.RD | DE-EE0005571 | - | (893) |
| Donald Danforth Plant Science Center | | | | |
| A Reference Phenotyping System for Energy Sorghum | 81.RD | 22815-C | - | 38,236 |
| General Electric Company | | | | |
| Joining of SiCf/SiC composites using polymer derived ceramics | 81.RD | 740134640 | - | 34,325 |
| Handix Scientific LLC | | | | |
| A Microfluidic Ice Nucleating Particle Counter for Continuous Measurements | 81.RD | 1801 // Prime # DE-SC0018474 | - | 14,315 |
| Lawrence Livermore National Laboratory | | | | |
| Characterization of Actinide Migration in Field Lysimeter Experiment | 81.RD | B626646 | - | 61,338 |
| Stabilization of Pu Complexes on Mineral Colloids by Natural Organic Matter | 81.RD | B621273 | - | 13,247 |
| Los Alamos National Laboratory | | | | |
| Autonomous Monitoring of Wellbore Integrity Applying Time Reverse Nonlinear Elastic Wave Spectroscopy (TR NEWS) and Fiber Optic Sensing and Communication | 81.RD | 476893 | - | 18,879 |
| Develop, Improve, and Maintain the Parallel Fine-Grained Soft Error Fault Injector | 81.RD | 406247 | - | 52,403 |
| Louisiana State University | | | | |
| Computational Catalysis and Atomic-level Synthesis of Materials: Building Effective Catalysts from First Principles | 81.RD | 41924 | - | 3,153 |
| Missouri University of Science and Technology | | | | |
| Additive Manufacture of Smart Parts with Embedded Sensors for In-Situ Monitoring in Advanced Energy Systems | 81.RD | 00042083-01 | - | 36,708 |
| National Technology & Engineering Solutions of Sandia | | | | |
| Experimental Investigation of Additive Manufactured Materials in Various Loading Conditions | 81.RD | PO# 1908748 | - | 8,780 |
| Global Optimization of Large-Scale AC Power Flow Problems | 81.RD | PO# 1787843-0 | - | 52,040 |
| NaSOW p.r. 1886058 | 81.RD | 1678873 | - | 10,673 |
| Savannah River Nuclear Solutions | | | | |
| AMDT Testing (NSFB00014) | 81.RD | PO 0000343108//TOA # NSCB00014//BOA 521 | - | 1,948 |
| AMRL Microscopy Center Instrumentation and Data Preparation (NSCB000012) | 81.RD | PO 347433; TOA NSCB000012; BOA 521 | - | 7,016 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------|--|---------------------------------|----------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Energy, continued | | | | |
| Pass-through programs from, continued: | | | | |
| Savannah River Nuclear Solutions, continued | | | | |
| CAPER GMLC Southeast Regional Partnership Support Activities (NSCB00003) | 81.RD | NSCB00003//BOA#0521// PO#277771 | 22,748 | 41,660 |
| Evaluating Thermal Heating with Elemental Mercury (NSCB00006) | 81.RD | NSCB00006//BOA#0521// PO#292699 | - | 41,135 |
| Joint Appointment (JA) - Support of Laboratory Research and Development | 81.RD | TOA/PO # 0000359811 // | - | - |
| LDRD Power Line Noise Study | 81.RD | NSCB00013 // BOA 521 | - | 9,730 |
| | 81.RD | 0000262949 | - | (195) |
| Li-ion Electrolyte Development | 81.RD | PO# 318416 // TOA # | - | - |
| | | NSCB00009 // BOA # 521 | - | 67,045 |
| Solid State Power Substation Roadmap | 81.RD | NSCB00005//BOA# 521// PO#289554 | - | 10,925 |
| SRNL External Review Committee (ERC) | 81.RD | PO# 313527 // NSCB00010 | - | - |
| SRNL External Review of Select Competencies: Environmental Science and Engineering, Chemistry and Radiochemistry, Materials Science and Engineering, and Separations Science and Engineering | 81.RD | // BOA # 521 | 15,194 | 47,962 |
| Support of Organosodalite Sorbents for Tc-99 and I-129 Remediation-NSCB00015 | 81.RD | BOA # 0521 | - | (135) |
| | | NSCB00015; | - | - |
| Support of Two-Day Workshop at SRS - NSCB00016 | 81.RD | PO 0000353501; BOA 521 | - | 23,972 |
| Synthesis & Characterization of Solid Proton Conductors and Conductivity Measurements - NSCB00020 | 81.RD | PO # 361550 // NSCB00016 | - | - |
| | | // BOA # 521 | - | 20,862 |
| | | TOA/PO# 366765 // | - | - |
| | 81.RD | NSCB00020 // BOA 521 | - | 1,561 |
| | | NSCB00008//BOA#0521 | - | - |
| | 81.RD | //PO#303764 | - | 39,072 |
| | | PO# 308825 // TOA # | - | - |
| | 81.RD | NSCB00007 // BOA # 521 | - | 7,646 |
| | | PO 317010 // TOA# | - | - |
| | 81.RD | NSCB00011 // BOA 521 | - | 132,090 |
| SCUREF | | | | |
| Advanced Microanalytical Measurements | 81.RD | B139023 | - | 7,860 |
| SRR Technical Support Provided by Clemson University | 81.RD | SRRA001 | - | 88,821 |
| Tritium Supply Chain Modeling & Analysis | 81.RD | B139020 | - | 18,100 |
| Water Isotope Separation Testing | 81.RD | B139024 | - | 17,189 |
| University of Cincinnati | | | | |
| Robust Metal-Ceramic Coaxial Cable Sensors for Distributed Temperature Monitoring in Fossil Energy Power Systems | 81.RD | 009170-002 PO#4500082057 | - | (10,308) |
| University of Minnesota | | | | |
| Energy Frontier Research Center for Inorganometallic Catalyst Design | 81.RD | A004527501 | - | 129,280 |
| University of Nebraska - Lincoln | | | | |
| Systems Analysis of the Physiological and Molecular Mechanisms of Sorghum Nutrient Use Efficiency, Water Use Efficiency and Interactions with the Soil Microbiome | 81.RD | 25-1215-0123-006 | - | 83,219 |
| University of South Carolina | | | | |
| Center for Hierarchical Waste Form Materials (CHWM) | 81.RD | 17-3256/USC#13020-FC78/ | - | 61,395 |
| University of Washington | | | | |
| TA(A) Precursor-Derived Nanostructured Si-C-X Materials from MHD Electrode Application | 81.RD | BPO9757 (formerly 763094) | - | 21,137 |
| UT-Battelle, LLC | | | | |
| Characterization of Novel Polymer Materials with AFM | 81.RD | 4000153152 | - | 20,606 |
| MINOS Data Analytics & Fusion Advisory | 81.RD | 4000153773 | - | 17,532 |
| | | 4000127400 / | - | - |
| Robust Network Fusion Algorithms for Detection and Localization of Radiation Sources | 81.RD | Vendor # 0000062498 | - | 1,788 |
| Total Department of Energy | | | 2,119,265 | 8,281,921 |
| Department of Education | | | | |
| GAANN: Model Validation Analytics in Support of High Consequence Decision Making | 84.RD | P200A150310 | - | 328,735 |
| Graduate Fellowship in Electrical & Computer Engineering | 84.RD | P200A150107 | - | 256,091 |
| Pass-through programs from: | | | | |
| National Writing Project | | | | |
| NWP 2018-2019 13 Scale-up C3WP AI&PD Grant | 84.RD | 01-SC11-2018i3C3WP | - | 10,034 |
| South Carolina Commission on Higher Education | | | | |
| ITQ - Exploring the Mathematics of Genetics | 84.RD | NONE | 12,266 | 81,974 |
| ITQ - Understanding Geometry by Design | 84.RD | NONE | 21,180 | 39,071 |
| Total Department of Education | | | 33,446 | 715,905 |
| Department of Health and Human Services | | | | |
| Academy of Behavioral Medicine Research Annual Conference | 93.RD | 1R13CA216984-01 | - | 10,061 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Health and Human Services, continued | | | | |
| BloodSurf 2016: Blood-Biomaterial Interactions | 93.RD | 1R13HL132513-01 | - | 19,024 |
| CanSim: A Novel Simulator for Training Cannulation Skills in Dialysis Care | 93.RD | 5K01DK111767-03 | - | 129,127 |
| Carry over funds from the original COBRE:EPIC year 1 funds | 93.RD | 5P20GM109094-02 REVISED | - | 345,135 |
| Center of Biomaterials for Tissue Regeneration (CBTR) | 93.RD | 5P20GM103444-08 | 281,674 | 2,092,552 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-02 | - | 347,803 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 1P20GM109094-01A1 | - | 348,733 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-02 | - | 402,776 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094 | - | 75,000 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-02 | - | 305,033 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-03 | - | 178,250 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-03 revised | - | 3,288 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-02 | - | 51,655 |
| COBRE: Eukaryotic Pathogens Innovation Center (EPIC) | 93.RD | 5P20GM109094-03 | - | 323,923 |
| Creatine: A Novel Modulator of GABA Inhibitory Synapses | 93.RD | 1R03HD088942-01 | - | 92,378 |
| Detecting and Monitoring Implant Infection Using X-ray Excited Luminescence Chemical Imaging (XELCI) | 93.RD | 5R01AR070305-02 | 5,319 | 322,804 |
| Developing Luminescent Tension-indicating Orthopedic Screw | 93.RD | 1R21EB019709-01A1 | - | 30,958 |
| Entamoeba Metabolism: The Role of Acetate Kinase and ADP-Forming Acetyl-CoA Synthetase | 93.RD | 1R15GM114759-01A1 | - | 97,547 |
| Functional Tissue Engineering and Regeneration of the Aortic Root | 93.RD | 1R56HL130950-01 | 67,412 | 177,647 |
| Identification of kinetoplastid parasite glucose uptake and subcellular localization inhibitors as therapeutic leads | 93.RD | 1R21AI127575-01 | 197,817 | 254,675 |
| Inhibition of Human Islet Amyloid Polypeptide Aggregation | 93.RD | 1R35GM119691-01 | - | 348,038 |
| Integrating Biomechanics & Cell Biology to Understand TMJ Pathology | 93.RD | 4R01DE021134-05 revised | 107,981 | 303,838 |
| Intensive Models of HCV Care for Injection Drug Users | 93.RD | 7R01DA034086-07 | 24,055 | 24,056 |
| Label Free RF Imaging of Cell Membrane Heterogeneity in Liquid | 93.RD | 4K25GM100480-05 | - | 63,936 |
| Mechanisms of Fluconazole-Induced Aneuploidy in Cryptococcus Neoformans | 93.RD | 1R15 AI119801-01 | - | 124,591 |
| Mechanisms of Long-term Arsenic Exposure on Stem Cells | 93.RD | 1R15ES027651-01 | - | 89,778 |
| Microfabricated Coculture Model: Myocyte Rescue by TNT-Transfer Mitochondria | 93.RD | 5R01HL124782-03 | 151,500 | 305,467 |
| Multiplexed, Quantitative Fluorescence Imaging in Tumor Sections | 93.RD | 7R21CA196418-04 Revised | - | 96,769 |
| Nanowired Human Cardiac Spheroids for Heart Repair | 93.RD | 5R01HL133308-02 | 57,440 | 230,117 |
| New Enzymes for DNA Demethylation | 93.RD | 1R15GM121997-01 | - | 100,390 |
| New Generation DelPhi: large systems and beyond electrostatics | 93.RD | 2R01GM093937-06A1 | 35,615 | 393,278 |
| Predicting the Heterogeneity of Cell-Fate Decisions | 93.RD | 7R01GM104184-05 | 25,093 | 123,057 |
| Predicting the Toxicity of Nanomaterials by a Transforming Protein Corona | 93.RD | 1R15ES022766-01A1 | - | 20,524 |
| Probe Identification by HTS for Plasmodium Falciparum Hexokinase | 93.RD | 1R03HD081723-01 | - | 6,409 |
| Realizing Improved Patient Care Through Human-Centered Design in the OR | 93.RD | 5P30HS024380-02 | 169,803 | 999,960 |
| Reducing Disparities in Birth Outcomes: A Randomized Controlled Trial on Centering Pregnancy | 93.RD | 5R01-HD82311-04 | 320,292 | 581,077 |
| SLC6A8 mutant zebrafish as a high throughput screening tool to identify candidate therapeutics of Creatine Deficiency Syndrome | 93.RD | 1R03MH115354-01 | - | 7,165 |
| SLC7A5-MTOR Regulation of Neural Development | 93.RD | 1R15NS096562-01A1 | - | 178,587 |
| Structure-function relationships between human temporomandibular lateral capsule-ligament complex tensile stiffness, collagen ultrastructure and ECM composition: Investigation of sexual dimorphisms | 93.RD | 1F325DE027864-01 | - | 3,469 |
| The Role of CAR and PXR in Gender Predominant P450 Expression and Induction | 93.RD | 2R15ES017321-03 | - | 133,395 |
| Theranostic Approach to Treat Abdominal Aortic Aneurysms | 93.RD | 5R01HL133662-02 | 67,288 | 213,926 |
| Translational Control of Encystation in the Entamoebae | 93.RD | 5R21AI08287-02 | 2,662 | 163,953 |
| Undergraduate Education and Device Innovation Through Clinical and Translational | 93.RD | 5R25EB016589-05 | - | 53,873 |
| Using Context to Validate and Improve Wrist-Tracking | 93.RD | 5R01HL118181-03 | 116,186 | 498,077 |
| Pass-through programs from: | | | | |
| Cornell University | | | | |
| Quantifying Molecular Consequences of Human Missense Variants with Large-scale Interactome Perturbation Studies | 93.RD | 82513-11007 | - | 4,759 |
| Doxy.me LLC | | | | |
| | | NIH Prime | | |
| Expanding teleconsent capabilities to improve clinical research recruitment | 93.RD | # 1R41LM012547-01A1 | - | 550 |
| Duke University | | | | |
| Inflammasomes Mediate Inflammations in Bladder Outlet Obstruction | 93.RD | 2034859 | - | 85,239 |
| Greenwood Genetics Center | | | | |
| 5214: Development of a Behavioral Outcome Measure for Rett Syndrome (RettBe) | 93.RD | RTT5214-2016 | - | 6,464 |
| Happy People Games LLC | | | | |
| Interactive Digital Intervention to Prevent Violence among Young Adults | 93.RD | 2017000938 | - | 31,008 |
| Icahn School of Medicine | | | | |
| Data Coordination and Integration Center for LINCS-BD2K - DSR | 93.RD | 0255-7895-4609 | - | 24,468 |
| Drug Combination Signatures for Prediction and Mitigation of Toxicity | 93.RD | 0255-8854-4609 | - | 55,354 |
| Medical University of South Carolina | | | | |
| A Work Systems Analysis of Sterile Processing | 93.RD | MUSC17-076-8C877 | - | 1,694 |
| Impact of Integrated HIV/NCD Screening on HIV Testing Uptake and Engagement in HIV Care: an RCT in Kisarawe, Tanzania | 93.RD | MUSC16-104-8C312/PO#296562 | - | 18,603 |
| Methods for Retrospective Multi-Site Research | 93.RD | MUSC12-046 | - | 140 |
| South Carolina Clinical and Translational Research Institute (SCTR) | 93.RD | MUSC18-038-8B122 | - | 3,218 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Health and Human Services, continued | | | | |
| Pass-through programs from, continued: | | | | |
| North Carolina Central University | | | | |
| Development of New Photo-Activated Antibacterial Agents | 93.RD | P0069772 | - | 57,277 |
| NUBAD, LLC | | 2013000548; F-Neo II | | |
| A Rapid Assay for RNA Targeted Drugs | 93.RD | (5R42GM097917-03) | - | 46,879 |
| Aminoglycosides with Reduced Ototoxicity | 93.RD | CLEM-004 | - | 73,354 |
| Development of Peptide Antibiotic Nucleic Acids | 93.RD | Prime # 5R41AI114114-02 | - | 17,321 |
| Nucleobase Aminosugars with Reduced Ototoxicity | 93.RD | NARO | - | 42,686 |
| Screening the Ribosome for new Target Sites | 93.RD | CLEM-003 | - | 55,189 |
| Purilogs, LLC | | | | |
| High-capacity Multimodal Anion-exchange Membranes for Purification of Biologics | 93.RD | PSI0003 | - | 34,597 |
| Protein A Membrane Columns for Rapid Protein Purification SBIR Phase I | 93.RD | PSI0002 | - | 17,223 |
| Rutgers, The State University of New Jersey | | | | |
| Integrated Technologies for Polymeric Biomaterials, RESBIO | 93.RD | 6218 PO#663258 | - | 43,695 |
| South Carolina Department of Health & Human Services | | | | |
| Quality Assurance Services for the Bureau of Long Term Care Services (Federal) | 93.RD | A202111999A (Federal) - FY18 | - | 519,676 |
| Quality Assurance Services for the Bureau of Long Term Care Services (FFP Federal) | 93.RD | A202111999A (FFP) - FY17 | - | (116) |
| South Carolina Department of Social Services | | | | |
| ICSS Employment and Training | 93.RD | 4400011567 | - | 606,088 |
| ICSS Employment and Training - Year 3 | 93.RD | 4400011567 Year 3 | - | 1,101,277 |
| ICSS Employment and Training Institute | 93.RD | 4400011567 Training Institute | - | 185,910 |
| ICSS Employment and Training Institute - Year 3 | 93.RD | 4400011567 Training Inst Year 3 | - | 280,723 |
| University of Colorado - Denver | | | | |
| Mechanisms of Mast Cell Directed Carbon Nanotube Toxicity | 93.RD | FY16.714.002 | - | 68,666 |
| Rocky Mountain Center for Total Worker Health | 93.RD | FY17.247.007 | - | 10,383 |
| Rocky Mountain Center for Total Worker Health | 93.RD | FY17.347.005 | - | 37,023 |
| University of Florida | | | | |
| Probiotics That Moderate PH and Antagonize Pathogens to Promote Oral Health | 93.RD | UFDSP00011201 00125985 | - | 30,292 |
| University of Kentucky | | | | |
| Southeast Center for Agricultural Health and Injury Prevention | 93.RD | PO# 7800004263 3210000731-18-247 | - | 1,688 |
| Southeast Center for Agricultural Health and Injury Prevention | 93.RD | PO#7800003833 3210000531-18-005 | - | 13,971 |
| University of Nebraska - Lincoln | | | | |
| Group Testing for Infectious Disease Detection: Multiplex Assays and Back End Screening | 93.RD | 24-0548-0008-002 | - | 112,085 |
| University of North Carolina - Charlotte | | | | |
| Characterization of Various Multifunctional Nucleic Acid Nanoparticles and Understanding Their Immunotoxicity | 93.RD | 20170356-02-CLE | - | 26,565 |
| University of South Carolina | | | | |
| South Carolina IDeA Network of Biomedical Research Excellence (SC INBRE) | 93.RD | 22050-Z217 22050-ZA01/ | - | 17,747 |
| South Carolina IDeA Network of Biomedical Research Excellence (SC INBRE) | 93.RD | PO No. 2000035000 | - | 204,659 |
| South Carolina IDeA Networks of Biomedical Research Excellence (INBRE) | | | | |
| Bioinformatics Core - Determining the Role of Chromatin Structure on the Activity of CRISPR-Cas9 | 93.RD | 18-3487 (15590-FB31)/ PO#2000036640 | - | 10,000 |
| University of Texas El Paso | | | | |
| BUILDing SCHOLARS (Research Enrichment Core) | 93.RD | 226141238E 226141198E | - | 34,275 |
| BUILDing Scholars-Research Enrichment Core | 93.RD | (formerly 226141170-04) | - | 7,058 |
| Upstate Affiliate Organization d/b/a Greenville Health System | | | | |
| Managing Abstinence in Newborns (MAiN) 2.0, Expansion | 93.RD | A202212651A-01CU; GHS Grant # G001217 | - | 181,800 |
| Virginia Polytechnic Institute | | | | |
| DPM Research: Monitoring Responses to Ventilation and Control by Water Sprays, and Capacity Building for Mine Ventilation Expertise | 93.RD | 431827-19244 | - | 10,822 |
| Systems Analysis of Social Pathways of Epidemics to Reduce Health Disparities | 93.RD | 431828-19244 | - | 4,368 |
| Total Department of Health and Human Services | | | 1,630,137 | 14,756,777 |
| Corporation for National and Community Service | | | | |
| 2017 National Civic Engagement Research Cooperative Agreement | 94.RD | 17REHSC001 | - | 16,559 |
| Pass-through programs from: | | | | |
| Furman University | | | | |
| Implementation Evaluation for Greenville Health System School Based Health Centers | 94.RD | NONE | - | 39,249 |
| Total Corporation for National and Community Service | | | - | 55,808 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|--|------------------------------------|-------------------------------|
| RESEARCH AND DEVELOPMENT CLUSTER, Continued | | | | |
| Department of Homeland Security | | | | |
| Pass-through programs from: | | | | |
| University of South Carolina | | | | |
| Coupling Experiments and Atomistic Modeling to Characterize Actinide Oxides in Support of Nuclear Forensics | 97.RD | 14-2646/17110 FA45 PO#'s 82368, 2000017843 | - | 30,667 |
| Total Department of Homeland Security | | | - | 30,667 |
| Total Research and Development Cluster | | | 9,171,706 | 73,610,589 |
| Department of Education | | | | |
| Student Financial Assistance Cluster | | | | |
| Federal Supplemental Educational Opportunity Grants | 84.007 | Unknown | - | 371,556 |
| Federal Work Study Program | 84.033 | Unknown | - | 776,439 |
| Federal Work Study Program - Federal Job Location and Development | 84.033 | Unknown | - | 60,000 |
| Federal Perkins Loan Program Federal Capital Contributions | 84.038 | Unknown | - | 9,607,249 |
| Federal Pell Grant Program | 84.063 | Unknown | - | 15,061,727 |
| Federal Direct Loans | 84.268 | Unknown | - | 105,426,351 |
| Teacher Education Assistance for College and Higher Education Grants (TEACH Grants) | 84.379 | Unknown | - | 14,477 |
| Total Student Financial Assistance Cluster | | | - | 131,317,799 |
| Special Education Cluster | | | | |
| Pass-through programs from: | | | | |
| South Carolina Department of Education | | | | |
| SC CREATE: Centers for the Re-Education and Advancement of Teachers in Special Education and Related Services Personnel | 84.027 | SC CREATE Funds Reservation | - | 3,687 |
| South Carolina Educational Interpreter Center | 84.027 | #4000037496 | - | 261,758 |
| Total Special Education Cluster | | | - | 265,445 |
| Total Department of Education | | | - | 131,583,244 |
| Department of Agriculture | | | | |
| SNAP Cluster | | | | |
| Pass-through programs from: | | | | |
| South Carolina Department of Social Services | | | | |
| SNAP-ED Nutrition Education and Obesity Prevention (CATCH - Coordinated Approach to Child Health) | 10.561 | 4400014598 | - | 32,045 |
| SNAP-ED Nutrition Education and Obesity Prevention Grant | 10.561 | 4400014563 | - | 30,963 |
| SNAP-ED: CATCH (Coordinated Approach to Child Health) | 10.561 | 4400017414 | - | 108,422 |
| SNAP-ED: Cooking Matters (03) | 10.561 | 4400017401 | - | 105,111 |
| SNAP-ED: Implementation of Sesame Street Healthy Habits for Life/Let's Move | 10.561 | 4400017384 | - | 142,662 |
| SNAP-ED: Policy, System Environment (PSE) Strategies and Outreach | 10.561 | 4400017366 | - | 80,244 |
| Total SNAP Cluster | | | - | 499,447 |
| Total Department of Agriculture | | | - | 499,447 |
| Department of Transportation | | | | |
| Highway Planning and Construction Cluster | | | | |
| Pass-through programs from: | | | | |
| South Carolina Department of Transportation | | | | |
| State Work Zone Safety Training Program | 20.205 | CBSA-002 1865; Proj No. 88P030908A0.2560 | - | 275,951 |
| Transportation Technology Transfer Service (T3S) | 20.205 | 1982; WBS No. 88P036997A0.2560 | - | 177,846 |
| Transportation Technology Transfer Service (T3S) 2018 | 20.205 | | - | 275,645 |
| Total Highway Planning and Construction Cluster | | | - | 729,442 |
| Total Department of Transportation | | | - | 729,442 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|---------------------------|---|------------------------------------|-------------------------------|
| OTHER PROGRAMS | | | | |
| Department of Agriculture | | | | |
| CAPS - Tier 1 | 10.025 | AP17PPQFO000C017 | - | 38,397 |
| CAPS - Pests of National Concern | 10.025 | AP17PPQFO000C017 | - | 16,395 |
| District 2, South Carolina FY17 Trace (Animal Disease Traceability) | 10.025 | AP17VSSPRS00C007 | - | 88,658 |
| District 2, South Carolina, FY 17 Umbrella (National Surveillance and Response for Animal Health Activities) | 10.025 | AP17VSSPRS00C030 | - | 243,943 |
| FY18 D2 SC ADT | 10.025 | AP18VSSPRS00C076 | - | 1,953 |
| FY18 D2 SC UMB | 10.025 | AP18VSSPRS00C014 | - | 14,549 |
| Imported Fire Ant | 10.025 | AP17PPQFO000C060 | - | 27,471 |
| Junior Invasive Inspectors/Farm Bill Project | 10.025 | 16-8245-0907-CA | - | 13,469 |
| SC FY17 Forest Pest Outreach | 10.025 | AP17PPQFO000C110 | - | 36,645 |
| SC FY17 Junior Invasive Inspectors Farm | 10.025 | AP17PPQFO000C182 | - | 25,283 |
| SC FY17 National Honey Bee Survey Farm | 10.025 | AP17PPQFO000C179 | - | 12,940 |
| SC FY17 Palm Commodity Survey Farm Bill | 10.025 | AP17PPQFO000C116 | - | 12,139 |
| SC FY17 Pathways Survey Farm Bill Project | 10.025 | AP17PPQFO000C109 | - | 20,673 |
| SC FY17 Witchweed | 10.025 | AP17PPQFO000C147 | - | 12,516 |
| SC FY18 CAPS/Combined Survey (Pests of National Concern) | 10.025 | AP18PPQFO000C131 | - | 11,304 |
| SC FY18 Exotic Woodborer Bark Beetle Survey | 10.025 | AP18PPQFO000C178 | - | 1,382 |
| SC FY18 Honey Bee Survey FG Goal 1S.0589 | 10.025 | AP18PPQFO000C176 | - | 819 |
| SC FY18 Imported Fire Ant | 10.025 | AP18PPQFO000C366 | - | 15,081 |
| SC FY18 P.ramorum Survey FB Goal 1S.0311 | 10.025 | AP18PPQFO000C180 | - | 915 |
| SC FY18 Palm Commodity Survey FB Goal 1S | 10.025 | AP18PPQFO000C179 | - | 1,622 |
| SC FY18 Pathways Survey FB Goal 1S.0014 | 10.025 | AP18PPQFO000C177 | - | 2,340 |
| SC NAHLN FY17 Level 2 Member Lab Agreement | 10.025 | AP17VSNVSL00C003 | - | 117,398 |
| SC NAHLN FY17 LIMS Agreement | 10.025 | AP17VSNVSL00C002 | - | 61,000 |
| SF FY18 CAPS Infrastructure (Tier 1) | 10.025 | AP18PPQFO000C132 | - | 26,259 |
| Stone Fruit Commodity/Farm Bill Project | 10.025 | 16-8245-0891-CA | - | 8,061 |
| Improving Energy Efficiency in South Carolina Animal Facilities and Greenhouses: | | | | |
| A Partnership for Education, Outreach and Technology Adoption | 10.054 | 68-4639-15-0002 | 102,656 | 220,665 |
| Production and Marketing Risk Management for Turf Grass Sod Producers in South Carolina | 10.460 | RM17RMEPP522C033 | | |
| South Carolina Meat-Poultry Inspection Department- (All Other) | 10.475 | (FMMI #: 4500075453) | - | 7,612 |
| South Carolina Meat-Poultry Inspection Department- (Compliance) | 10.475 | BASE17 (12-37-A307) | - | 54,374 |
| South Carolina Meat-Poultry Inspection Department- (In Plant) | 10.475 | BASE17 (12-37-A307) | - | 33,950 |
| South Carolina Meat-Poultry Inspection Department- (Laboratory) | 10.475 | BASE17 (12-37-A307) | - | 272,370 |
| South Carolina Meat-Poultry Inspection Department- Cross Utilization '17 | 10.475 | BASE17 (12-37-A307) | - | 5,742 |
| South Carolina Meat-Poultry Inspection Department- PHDCIS/FAIM17 | 10.475 | Cross Utilization | - | 73,223 |
| Clemson Sustainable Community Project | 10.475 | PHDCIS17 (12-37-A307) | - | 1,167 |
| Cooperative Extension Service - Smith Lever | 10.500 | 2013-41520-21027 | 22,198 | 220,513 |
| Web Based Nutrition Education and Evaluation Reporting System (webNEERS) | 10.500 | Unknown | - | 6,602,463 |
| Web Based Nutrition Education and Evaluation Reporting System (webNEERS) | 10.500 | 2012-41510-20085 | - | 18,569 |
| Wood Utilization: Pathway to Healthy Forests and Sustainable Communities | 10.500 | 2017-41510-26791 | - | 171,206 |
| Demonstrating Habitat Establishment for Pollinators and Other Beneficial Insects | 10.500 | 2015-46401-24241 | - | 46,822 |
| Increase Awareness of Communities' Abilities to Develop Their Own Food Systems and Economics | 10.902 | 68-4639-14-0021 | - | 235 |
| Statewide Demonstration of Improved Irrigation Management to Conserve Water and Enhance Farm Profits Utilizing Real-Time and Site-Specific Weather Information | 10.902 | 69-4639-15-0001 | - | 30,526 |
| Demonstration of Innovative Interseeding Technology for Crop Rotations to Enhance Soil Properties and Reduce Energy Consumption and Pest Occurrence While Optimizing Farm Profits | 10.902 | 69-4639-16-266 | - | 11,340 |
| Pass-through programs from: | 10.912 | 69-3A75-12-212 | - | (521) |
| Mississippi State University | | | | |
| Stronger Economies Together (SET) | 10.U01 | 018000.340753.23 | 11,040 | 17,238 |
| South Carolina Department of Social Services | | | | |
| SNAP-ED Implementation Sesame Street Healthy Habits for Life/Let's Move | 10.U02 | 4400014785 | - | 36,403 |
| South Carolina Forestry Commission | | | | |
| Cogongrass and Invasive Forest Pests Detection and Education Project | 10.U03 | None | - | 87,870 |
| Forest Pests Detection and Education and Cogongrass Detection, Education, and Eradication Project | 10.U04 | None | - | 57,219 |
| University of Georgia | | | | |
| Southern Region SARE Sustainable Agriculture Training Program -PDP- Model State Program Training | 10.215 | RD309-134/S001193 | - | 21,329 |
| Sustainable Ag Research and Education. SARE program - Model State Program | 10.215 | RD309-137/S001447 | - | 26,709 |
| University of Florida | | | | |
| Southern Plant Diagnostics Network | 10.304 | UFDSP00011536/P0019073 | - | 12,115 |
| University of Florida | | | | |
| Southern Training, Education, Extension, Outreach and Technical Assistance Center to Enhance Produce Safety | 10.328 | UFDSP00011131 | - | 11,769 |
| 2018 4-H Military Partnership Grant | 10.500 | S17121.01 | - | 17,652 |
| 4-H Military Partnership and Outreach Support Program | 10.500 | S17121 | - | 12,546 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|------------------------------------|---|--|---------------------------------------|
| OTHER PROGRAMS, Continued | | | | |
| Department of Agriculture, continued | | | | |
| Pass-through programs from: | | | | |
| Pennsylvania State University | | | | |
| AMS Grant Writing Workshop and Technical Assistance | 10.500 | 5403-CU-USDA-2628 | - | 3,921 |
| Total Department of Agriculture | | | 135,894 | 8,886,239 |
| Department of the Interior | | | | |
| Digitize and Transcribe Historical Documents, Oversized Documents, Video Tapes, Audio Tapes, and Photographic Materials | 15.945 | P17AC01647 | - | 2,154 |
| Digitize Archeological Oversized Documents and Photographic Materials | 15.945 | P16AC01783 | - | 12,770 |
| Digitize Photographic Materials for Everglades and Biscayne National Parks | 15.945 | P16AC01406 | - | 40,402 |
| Total Department of the Interior | | | - | 55,326 |
| Department of Justice | | | | |
| Pass-through programs from: | | | | |
| National 4-H Council | | | | |
| South Carolina Mentoring Program | 16.726 | 2017-JU-FX-0016 | - | 8,757 |
| South Carolina Mentoring Program - NMP7 | 16.726 | 09165; NMP7 | - | 80,412 |
| Total Department of Justice | | | - | 89,169 |
| Department of State | | | | |
| Pass-through programs from: | | | | |
| National Ability Center | | | | |
| Adaptive Sports for Social Change (ASSC) | 19.415 | 2016001342 | - | 12,557 |
| Total Department of State | | | - | 12,557 |
| National Endowment for the Arts | | | | |
| Pass-through programs from: | | | | |
| South Arts | | | | |
| South Arts: Launchpad Program - 2017 Performing Arts Exchange (PAE) | 45.025 | None | - | 925 |
| Total National Endowment for the Arts | | | - | 925 |
| National Endowment for the Humanities | | | | |
| Call My Name: African Americans in Early Clemson University History | 45.130 | ZR-256734-18 | - | 507 |
| Total National Endowment for the Humanities | | | - | 507 |
| Institute of Museum & Library Services | | | | |
| Pass-through programs from: | | | | |
| Richland County Public Library | | | | |
| Fresh Food/Fresh Thinking | 45.312 | 2017001063; PO #675 | - | 18,851 |
| Total Institute of Museum & Library Services | | | - | 18,851 |
| National Science Foundation | | | | |
| Collaborative Research: Computational Intelligence Methods for Dynamic Stochastic Optimization of Smart Grid Operation with High Penetration of Renewable Energy | 47.041 | ECCS-1232070 | - | 36,517 |
| Clemson University Middle Grades Noyce Phase II Proposal | 47.076 | 1540623 | - | 1,520 |
| Tigers Teach Noyce Scholarship | 47.076 | DUE-1136293 | - | (5,526) |
| Total National Science Foundation | | | - | 32,511 |
| Small Business Administration | | | | |
| Pass-through programs from: | | | | |
| University of South Carolina | | | | |
| Small Business Development Center - Operating Grant (Federal) 2017 | 59.037 | Federal | - | 42,396 |
| | | Federal 21250 ZL85/ | | |
| Small Business Development Center - Operating Grant (Federal) 2018 | 59.037 | SBAHQ-18-B-0039 | - | 292,512 |
| Small Business Development Center 2016 Carryover | 59.037 | Federal Carryover 2016 | - | 13,560 |
| Total Small Business Administration | | | - | 348,468 |
| Environmental Protection Agency | | | | |
| IPM Mosquito Control | 66.204 | AA-00D49416 | - | 25,701 |
| Consolidated Pesticide Compliance Monitoring - Certification and Training | 66.700 | E-98463817 | - | 123,856 |
| Consolidated Pesticide Compliance Monitoring - Enforcement | 66.700 | E-98463617 | - | 166,325 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|--|---------------------------|---|------------------------------------|-------------------------------|
| OTHER PROGRAMS, Continued | | | | |
| Environmental Protection Agency, continued | | | | |
| Consolidated Pesticide Compliance Monitoring - Special Programs | 66.700 | E-98463717 | - | 216,435 |
| Fiscal Year 2015 Pollution Prevention Grant Program | 66.708 | NP00D41716 | - | 19,502 |
| Pass-through programs from: | | | | |
| Commonwealth of Virginia | | | | |
| Animal Waste Analysis for the Commonwealth of Virginia | 66.460 | 319-2016-01-PT | - | 31,200 |
| Total Environmental Protection Agency | | | - | 583,019 |
| Department of Energy | | | | |
| Pass-through programs from: | | | | |
| Southeastern Coastal Wind Coalition | | | | |
| Southeast Wind Energy Regional Resource Center | 81.U01 | None | - | 8,182 |
| Total Department of Energy | | | - | 8,182 |
| Department of Education | | | | |
| Exemplary Personnel for Education, Research, and Teaching in Special Education (ExPERTISE) | 84.325 | H325D140044 | - | 245,381 |
| Pass-through programs from: | | | | |
| South Carolina Department of Education | | | | |
| 2016-2017 Agriculture Education Professional Development | 84.048 | None | - | (66) |
| 2017-18 Agriculture Teacher Education and Professional Development | 84.048 | Agriculture Education | - | 46,628 |
| Future Farmers Association (FFA) Program Assistant | 84.048 | FFA Program Assistant | - | 18,839 |
| Monaview Elementary | | | | |
| Monaview Magic Initiative | 84.287 | 1st PO #203214 // 2nd PO #211132 | - | 10,288 |
| South Carolina Department of Education | | | | |
| 21st CCLC After-School Learning Centers at Spearman Elementary School and West Pelzer Elementary School | 84.287 | H63010006916 17 21st CCLC-20 | - | 2,044 |
| 21st CCLC After-School Program at Cedar Grove Elementary, Palmetto Elementary, LaFrance Elementary, Pendleton Elementary, and Townville Elementary | 84.287 | H63010006916 17 21st CCLC-40 Cedar Grove | 7,479 | 10,092 |
| 21st CCLC After-School Program at Cedar Grove, Palmetto, LaFrance, Townville, and Pendleton Elementary | 84.287 | H63010006917 18 21st CCLC-40 | 91,870 | 121,665 |
| 21st CCLC After-School Program at Chastain and Liberty Elementary School | 84.287 | H63010006916 17 H63010006917 18 | 3,520 | 4,768 |
| 21st Century Community Learning Centers - Summer Bridge Program at Chastain Elementary and Liberty Elementary | 84.287 | Summer Bridge-91 H63010006917 18 | - | 2,766 |
| 21st Century Community Learning Centers - Summer Bridge Program at LaFrance, Townville, and Pendleton Elementary | 84.287 | Summer Bridge-92 H63010006917 18 | - | 2,759 |
| 21st Century Community Learning Centers - Summer Bridge Program at Spearman Elementary and West Pelzer Elementary | 84.287 | Summer Bridge-90 H63010006916 17 | - | 3,666 |
| After-School Program at Cedar Grove Elementary, Palmetto Elementary, LaFrance Elementary, Pendleton Elementary, and Townville Elementary | 84.287 | Summer Bridge-92 H63010006916 17 | 41,844 | 50,676 |
| After-School Program at Chastain and Liberty Elementary School - Summer Bridge Project | 84.287 | Summer Bridge-91 H63010006917 18 | 23,541 | 32,580 |
| After-School Program at Chastain Elementary and Liberty Elementary | 84.287 | 21st CCLC-50 H63010006917 18 | 44,271 | 92,268 |
| After-School Program at Spearman Elementary and West Pelzer Elementary | 84.287 | 21st CCLC-20 H63010006916 17 | 40,897 | 96,555 |
| After-School Program at Spearman Elementary School and West Pelzer Elementary School - Summer Bridge Project | 84.287 | Summer Bridge-90 | 25,781 | 32,887 |
| National Writing Project | | | | |
| 01-SC11-SEED2016; 2016-2017 SEED Advanced Institute to Scale Up the NWP College-Ready Writers Program Grant | 84.367 | 01-SC11-SEED2016 | - | (2) |
| 2017-2018 NWP CRWP-SEED Professional Development in High-Need Middle or High School Grant with its partner: Carver Middle School | 84.367 | 01-SC11-SEED2017- CRWPPD | 2,250 | 13,049 |
| 2017-2018 NWP SEED Invitational Leadership Institute to Invest in Developing New Teacher-Leaders Grants | 84.367 | 01-SC11-SEED2017-ILI | - | 15,000 |
| SEED: High Need PD for Orangeburg 05 | 84.367 | 01-SC11-SEED2018-C3WPPD | - | 2,124 |
| South Carolina Commission on Higher Education | | | | |
| ITQ - Improving Historical Understanding through Structured Inquiry and Multimedia Exchange | 84.367 | None | 13,082 | 29,599 |
| National Writing Project | | | | |
| 2017-2018 i3 Scale-up the College Ready Writers Program (CRWP) Advanced Institute Grant | 84.411 | 01-SC11-2017i3A1 // Prime# U411A160004 | - | 13,235 |
| The Ohio State University | | | | |
| Improving Literacy Outcomes for Beginning Readers with Disabilities | 84.411 | 60046517 | - | 246,445 |
| Total Department of Education | | | 294,535 | 1,093,246 |
| Department of Health and Human Services | | | | |
| Clemson Care: A Campus-Wide Comprehensive Suicide Prevention Strategy | 93.243 | 5U79SM061785-03 | - | 22,775 |

The accompanying notes are an integral part of this schedule

Clemson University, Clemson, South Carolina
Schedule of Expenditures of Federal Awards
For the year ended June 30, 2018

| Federal Grantor/Pass-Through Grantor/Program Title | Federal CFDA Number | Pass-through Entity Identifying Number | Passed Through to Subrecipients | Total Federal Expenditures |
|---|------------------------------------|---|--|---------------------------------------|
| OTHER PROGRAMS, Continued | | | | |
| Department of Health and Human Services, continued | | | | |
| Pass-through programs from: | | | | |
| South Carolina Department of Agriculture | | | | |
| Food Safety Modernization Act (FSMA) Position - Year 2 | 93.103 | FSMA Year 2 | - | 95,427 |
| University of South Carolina | | | | |
| Faith, Activity, and Nutrition: Dissemination in Underserved Communities - Year 3 | 93.135 | 17-3168/PO#2000029191 18-3457/PO#2000035993 | - | 148 |
| Faith, Activity, and Nutrition: Dissemination in Underserved Communities - Year 4 | 93.135 | USC No.11570-FB38 | - | 4,891 |
| South Carolina Campaign to Prevent Teen Pregnancy | | | | |
| Accelerating Progress: Strengthening Teen Pregnancy Initiatives Among High Need South Carolina Populations (Tier 1A) | 93.297 | None | - | 5,086 |
| South Carolina Department of Health and Environmental Control | | | | |
| DHEC Farm-to Retail | 93.757 | CY-7-785 | - | 70,412 |
| South Carolina Department of Health and Environmental Control | | | | |
| South Carolina Outdoor Learning Environments | 93.758 | CY-7-545 | - | 7,670 |
| Upstate Affiliate Organization d/b/a Greenville Health System | | | | |
| GHS-REACH: A Caregiver Coaching Intervention for High Risk Patient/ Caregivers to Extend Dementia Capable Services | 93.763 | 7315-1 // Grant # G007316 | - | 32,927 |
| Total Department of Health and Human Services | | | - | 239,336 |
| Department of Homeland Security | | | | |
| Pass-through programs from: | | | | |
| South Carolina Emergency Management Division | | | | |
| FEMA Public Assistance - 4286 Hurricane Matthew (Debris Removal 1-30 Days) | 97.036 | F#667 CUDLO1A | - | 24,206 |
| FEMA Public Assistance - 4286 Hurricane Matthew (Debris Removal 31-90 Days) | 97.036 | F#802 CUDLO2A | - | 6,018 |
| FEMA Public Assistance - 4286 Hurricane Matthew (Debris Removal 91-180 Days) | 97.036 | F#820 CUDLO3A | - | 30,850 |
| FEMA Public Assistance - 4286 Hurricane Matthew (Generator/Emergency Protective Measures) | 97.036 | F#1072 CUDLO1B | - | 4,828 |
| South Carolina Law Enforcement Division | | | | |
| 2016 Update of SC Ag-Watch Manual | 97.067 | 15SHSP36 | - | 16,805 |
| Total Department of Homeland Security | | | - | 82,707 |
| Total Other Programs | | | 430,429 | 11,451,043 |
| Total Federal Expenditures | | | \$ 9,602,135 | 217,873,765 |

Clemson University**Clemson, South Carolina*****Notes to the Schedule of Expenditures of Federal Awards******June 30, 2018***

Note 1. Basis of Presentation

The accompanying schedule of expenditures of federal awards (the Schedule) includes the federal award activity of Clemson University (the University) and is presented on the accrual basis of accounting. The information in the Schedule is presented in accordance with the requirements of Title 2 U.S. Code of Federal Regulations Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Because the Schedule presents only a selected portion of the operations of Clemson University, it is not intended to and does not present the financial position, changes in net position, or cash flows of the University.

Note 2. Summary of Significant Accounting Policies for Federal Award Expenditures

Expenditures for student financial aid programs include the federal share of students' Federal Supplemental Educational Opportunity Grant (FSEOG) program grants and Federal Work Study (FWS) program earnings, certain other federal financial aid for students and administrative cost allowances, where applicable.

Expenditures for federal research and development programs are determined using the cost accounting principles and procedures set forth in either OMB Circular A-21, *Cost Principles for Educational Institutions* or in Uniform Guidance, as applicable, wherein certain types of expenditures are not allowable or are limited as to reimbursement.

Negative amounts shown on the Schedule represent adjustments or credits made in the normal course of business to amounts reported as expenditures in prior years.

Expenditures for nonfinancial aid awards include indirect costs, related primarily to facilities operation and maintenance and general, divisional and departmental administrative services, which are allocated to direct cost objectives (including federal awards) based on negotiated formulas commonly referred to as facilities and administrative cost rates. Facilities and administrative costs allocated to such awards for the year ended June 30, 2018, were based on predetermined fixed rates negotiated with the University's cognizant federal agency. The University has elected not to use the 10-percent de minimis indirect cost rate as allowed under the Uniform Guidance.

Note 3. Federal Perkins Loan Program (CFDA Number 84.038)

The Federal Perkins Loan Program is administered directly by the University and balances and transactions relating to the program are included in the University's financial statements. Federal expenditures reported on the face of the schedule include loans outstanding at the beginning of the year, loans made during the year, loan cancellations, interest subsidies and administrative expenses. The balance of loans outstanding under the Federal Perkins Loan Program was \$7,389,809 as of June 30, 2018.

Clemson University**Clemson, South Carolina*****Notes to the Schedule of Expenditures of Federal Awards******June 30, 2018***

Note 4. Contingencies

The University receives funds under various federal grant programs and such awards are to be expended in accordance with the provisions of the various grants. Compliance with the grants is subject to audit by various government agencies which may impose sanctions in the event of non-compliance. Management believes that they have complied with all aspects of the various grant provisions and the results of adjustments, if any, relating to such audits would not have any material financial impact.

**Independent Auditor's Report on Internal Control Over Financial Reporting
and on Compliance and Other Matters Based on an Audit of
Financial Statements Performed in Accordance with
*Government Auditing Standards***

Members of the Board of Trustees
Clemson University
Clemson, South Carolina

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the business-type activities and discretely presented component units of Clemson University (the University), as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise the University's basic financial statements, and have issued our report thereon dated September 28, 2018. Our report includes a reference to other auditors who audited the financial statements of the Clemson University Foundation, the Clemson University Land Stewardship Foundation and IPTAY, as described in our report on Clemson University's financial statements. This report does not include the results of other auditors' testing of internal control over financial reporting or compliance and other matters that are reported on separately by those auditors. The financial statements of the Clemson University Foundation, the Clemson University Land Stewardship Foundation and IPTAY were not audited in accordance with *Government Auditing Standards*.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

A handwritten signature in black ink that reads "Elliott Davis, LLC". The signature is written in a cursive, flowing style.

Greenville, South Carolina
September 28, 2018

**Independent Auditor's Report on Compliance for
Each Major Federal Program; Report on Internal Control Over
Compliance; and Report on the Schedule of Expenditures of
Federal Awards Required by the Uniform Guidance**

Members of the Board of Trustees
Clemson University
Clemson, South Carolina

Report on Compliance for Each Major Federal Program

We have audited Clemson University's (the University) compliance with the types of compliance requirements described in the *OMB Compliance Supplement* that could have a direct and material effect on each of the University's major federal programs for the year ended June 30, 2018. The University's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations, and the terms and conditions of its federal awards applicable to its federal programs.

Auditor's Responsibility

Our responsibility is to express an opinion on compliance for each of the University's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 *U.S. Code of Federal Regulations Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Those standards and the Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the University's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the University's compliance.

Opinion on Each Major Federal Program

In our opinion, the University complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2018.

Report on Internal Control Over Compliance

Management of the University is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the University's internal control over compliance with the types of requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the University's internal control over compliance.

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A *significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

We have audited the financial statements of the business-type activities and the aggregate discretely presented components of the University, a component unit of the State of South Carolina, as of and for the year ended June 30, 2018, and the related notes to the financial statements, which collectively comprise the University's basic financial statements. We issued our report thereon dated September 28, 2018, which contained unmodified opinions on those financial statements. We did not audit the financial statements of the Clemson University Foundation (a discretely presented component unit), the Clemson University Land Stewardship Foundation (a discretely presented component unit), and IPTAY (a discretely presented component unit). Those statements were audited by other auditors whose reports have been furnished to us, and our opinions, insofar as they relate to the amounts included for these discretely presented components units, are based solely on the

Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance, continued

reports of the other auditors. Our audit was conducted for the purpose of forming opinions on the financial statements as a whole. The accompanying schedule of expenditures of federal awards is presented for purposes of additional analysis as required by the Uniform Guidance and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditure of federal awards is fairly stated in all material respects in relation to the basic financial statements as a whole.

A handwritten signature in black ink that reads "Elliott Davis, LLC". The signature is written in a cursive, flowing style.

Greenville, South Carolina

September 28, 2018

Clemson University
Clemson, South Carolina
Schedule of Findings and Questioned Costs
For the year ended June 30, 2018

Section I. Summary of Auditor's Results

Financial Statements

Type of report the auditor issued on whether the financial statements were prepared in accordance with GAAP: Unmodified

Internal control over financial reporting:

- Material weakness identified? _____ yes X no
- Significant deficiency identified? _____ yes X none reported

Noncompliance material to financial statements noted? _____ yes X no

Federal Awards

Internal control over major federal programs:

- Material weakness identified? _____ yes X no
- Significant deficiency identified? _____ yes X none reported

Type of auditor's report issued on compliance for major federal programs: Unmodified

Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516 (a)? _____ yes X no

Identification of major federal programs:

| <u>CFDA Numbers</u> | <u>Name of federal program or cluster</u> |
|--|---|
| 10.RD; 11.RD; 12.RD; 15.RD; 16.RD; 20.RD; 43.RD; 45.RD; 47.RD; 62.RD; 64.RD; 66.RD; 77.RD; 81.RD; 84.RD; 93.RD; 94.RD; 97.RD | Research and Development Cluster |
| 10.500 | Cooperative Extension Service – Smith Lever |

Dollar threshold used to distinguish between Type A and Type B Programs \$3,000,000

Auditee qualified as low-risk auditee? X yes _____ no

Clemson University
Clemson, South Carolina
Schedule of Findings and Questioned Costs
For the year ended June 30, 2018

Section II. Financial Statement Findings

None reported

Section III. Federal Award Questioned Costs and Findings

None reported



Clemson University Clemson, South Carolina *Summary Schedule of Prior Audit Findings For the year ended June 30, 2018*

In accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States, the following is the status of known material findings and recommendations from prior year audits:

Finding 2017-001 Student Loan Repayments

Federal Agency: Department of Education

CONTROLLER'S OFFICE

Clemson University
Administrative Services Bldg.
108 Pearman Blvd.
Box 345321
Clemson, SC
29634-5321

P 864-656-2000
F 864-656-5600

Program: CFDA No. 84.038 – Federal Perkins Loan Program

Condition:

The University communicated incorrect separation dates to the third-party loan servicer for a number of students who separated from the University and began repayment during the 2016-2017 fiscal year.

A test of the loans entering repayment during the year revealed discrepancies in the separation date reported to the student loan servicer responsible for converting loans to repayment and the date the students completed the course of study. This resulted in a corresponding delay in the repayment start date with no impact on the total repayment cost of the loans.

Current Action

Taken/Current Status:

Student Financial Services and Financial Aid personnel attended training sessions presented by external counsel followed by meetings discussing internal controls and documentation of processes and reviews.

Student Financial Services developed and implemented Perkins loan separation procedures covering reporting of Perkins Loan recipients who graduate, withdraw during the term, complete the term but do not return to Clemson University, or students who drop below half-time enrollment.

Procedures include a validation of student system graduation data to the external loan servicer at each graduation, a monthly comparison of student system enrollment status to the external loan servicer and the Automated Clearinghouse, and monthly compliance reviews, and comprehensive documentation of variances and revisions.